# MARINE RECORD

ESTABLISHED 1878.

VOL. XXV, No. 7. CLEVELAND -- FEBRUARY 13, 1902 -- CHICAGO. $2.00 Per Year. 10c. Single Copy


## LAKE CARRIERS' ASSOCIATION.

To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interests of Lake Carriers, and to improve the character of the service rendered to the public.

PRESIDENT.

WM. LIVINGSTONE, Detroit.

1ST VICE-PRESIDENT.

J. C. GILCHRIST, Cleveland.

SECRETARY.

HARVEY L. BROWN, Buffalo.

TREASURER.

GEORGE P. MCKAY, Cleveland.

COUNSEL.

HARVEY D. GOULDER, Cleveland.

EXECUTIVE AND FINANCE COMMITTEE.

JAMES CORRIGAN, Chairman, Cleveland.

COMMITTEE ON LEGISLATION.

GIBSON L. DOUGLAS, Chairman, Buffalo.

COMMITTEE ON AIDS TO NAVIGATION.

GEORGE P. MCKAY, Chairman, Cleveland.

## ENGINEERS' WAGES LIST.

While no radical changes were made, as compared with last season's figures, in the classification of boats, crew list and schedule of wages adopted for the coming season by the Marine Engineers' Beneficial Association at its recent annual convention in Washington, there are some points of difference between the old and new schedules which the engineers believe will have a tendency to make the new schedule more satisfactory both to the vessel owners and the engineers.

The schedule worked out at the recent engineers' conference in Detroit was approved and adopted by the convention in its entirety. The new schedule embodies a separate classification, crew list and wage scale for wooden steamers, of which four classes are designated. Steel steamers are grouped in three classes, the basis of tonnage upon which the classification is made being somewhat higher than last season. No change is made in the crew list, and the wage schedule is virtually the same, except that a yearly schedule not included last season has been added, as has also a new scale to the schedule for wooden steamers. In the following schedules, classifications are based on gross tonnage:

Steel steamers, first-class—All steel freight boats 2,100 gross tons or over; all steel package freight boats over 1,800 tons; all steel passenger steamers over 1,200 gross tons.

Second class—All steel freight steamers not included in first class; all steel passenger steamers under 1,200 tons and over 300 tons.

Third class—All steel steamers not included in first and second classes, and all passenger steamers under 300 ton.

Crew list—All first class steamers having water tube boilers or more than three boilers of any kind, three engineers and two oilers and water tenders when required; all other first class steamers not included in above, two engineers and two oilers; all second class passenger steamers, one oiler.

All second class steel steamers from 1,000 to 2,100 tons, having water bottoms and auxiliary machinery such as electric light engines, steering capstan engines, windlasses, blowing engines, hoisting engines, running shaft line, etc. two engineers, and two oilers; all second class steel steamers from 1,000 to 2,100 tons having water bottoms, steering engines and windlass engines only, two engineers and one oiler.

Wage scale—First class, chief engineer, $150 per month, or $1,500 per annum; first assistant $100 per month, or $960 per annum; second assistant, $75 per month.

Second class—Chief engineer, $125 per month, or $1,350 per annum; first assistant, $90 per month, or $840 per annum

Third class—Chief engineer, $105 per month or $1,100 per annum; first assisant, $75 per month, or $720 per annum.

Wooden steamers, first class—All steamers over 1,200 gross tons; all package freight boats over 750 tons.

Second class—All steamers under 1,200 tons and over 600 tons.

Third class—All steamers under 600 tons and over 200 tons.

Fourth class—All steamers not included in above classes.

Crew list—All first class boats over 1,500 tons, not less than one oiler; all first class package freight boats, two engineers and two oilers; all first class boats under 1,500 tons, two engineers and one oiler.

Wage scale, first class—Chief engineer, $125 per month, or $1,350 per annum; first assistant, $90 per month or $840 per annum.

Second class—Chief engineer, $114 per month or $1,100 annum; first assistant, $84 per month, or $800 per annum. annum.

Third class—Chief engineer, $105 per month, or $1,000 per annum; first assistant, $75 per month, or $700 per annum.

Thid class—Chief engineer, $105 per month or $1,000 per month or $1,00 per annum; first assistant, $75 per month or $700 per annum.

Fourth class—Chief engineer, $95 per month or $900 per annum; first assistant, $65 per month or $600 per annum.

The classification of steamers for the season of 1901 was:

First class—All steamers of more than 1,800 tons and all passenger steamers of more than 750 tons.

Second class—All steel steamers of less than 1,800 tons and more than 500 tons, and all wooden steamers of more than 500 tons and all passenger steamers of more than 300 tons and less than 750 tons.

Third class—All steamers not included in the first and second classes, including tugs and canal boats.

## AIDS TO NAVIGATION.

Congress authorized, by act approved on February 15, 1893, the establishment of a number of light stations at an aggregate cost of nearly half a million dollars, but made no appropriation at that time for their construction. Since then from time to time appropriation has been made for the erection of many of them. The following is a list of the light stations relating to the lakes now remaining for which no appropriation has been made, with the maximum amount which each may cost:

| | |
|---|---|
| Fairport Harbor fog signal, Ohio | $ 4,300 |
| Lorain Harbor Black river fog signal, Ohio | 4,300 |
| Sand Hills lighthouse, Michigan | 20,000 |
| Bayfield light and fog signal, Wisconsin | 5,000 |
| Pats (or Hat) Point light and fog signal, Minnesota | 15,000 |
| Little Gull Island light and fog signal, Michigan | 20,000 |
| Peshtigo Shoal, Green Bay, Wisconsin | 10,000 |
| Wilson Harbor light, New York | 2,500 |

## REVENUE CUTTER BILL.

Mr. Frye presented a resolution of the National Marine Engineers' Beneficial Association, requesting the passage of House bill 5796, to promote the efficiency of the Revenue-Cutter Service; which was ordered to lie on the table, and to be printed in the Record as follows:

WASHINGTON, D. C., January 23, 1902.

Hon. WILLIAM P. FRYE,

Chairman Committee on Commerce, United States Senate:

Whereas there is now pending before your committee, House bill 5796, for the promotion of the efficiency of the Revenue-Cutter Service; and

Whereas that service is universally recognized as a most important auxiliary in aid of commerce, in the enforcement of the navigation laws, and all laws appertaining to maritime affairs; and

Whereas we deem it of the utmost importance that said service shall be maintained in the highest state of efficiency; Therefore, be it

Resolved by the Marine Engineers' Beneficial Association of the United States in annual meeting assembled, That the Senate and House of Representatives be earnestly requested to enact said bill into law.

[SEAL.]

GEORGE UHLER,
National President.
GEORGE A. GRUBB,
National Secretary.

## ANNUAL MEETINGS.

The Detroit transportation companies held their annual meetings Tuesday, and elected officers as follows:

White Star Line—President, A. A. Parker; vice-president, L. C. Waldo; treasurer, John Pridgeon, jr.; secretary and traffic manager, Charles F. Bielman; general manager, B. W. Parker. Directors, A. A. Parker, B. W. Parker, John Pridgeon, jr., T. H. Newberry, C. F. Bielman, L. C. Waldo, James H. Muir, Robert T. Gray and A. W. Colton.

Roby Transportation Co.—John B. Roby, president; John W. Donaldson, vice-president; L. C. Waldo, secretary and treasurer.

Northwestern Transportation Co.—Harvey H. Brown, president; Stephen E. Hartnell, vice-president; L. C. Waldo, secretary and treasurer; directors, L. C. Waldo, C. T. Pratt, Robert P. Hartnell, Stephen E. Hartnell and H. H. Brown.

Michigan Steamship Co.—Directors, Frank J. Hecker, Watson M. Freer, James McMillan, Frank E. Kirby and Alex. A. McVittie.,

Yosemite Steamship Co.—Truman H. Newberry, Cyrus E. Lothrop, Philip H. McMillan, Henry B. Joy, M. E. Farr, directors.

Wolverine Steamship Co.—John B. Roby Watson M Freer, Frank J. Hecker, James McMillan and A. A. McVittie, directors. ,

American Steamship Co.—James McMillan, M. W. Aldrich, W. C. McMillan, Hugh McMillan and M. B. McMillan, directors.

Pridgeon Transit Co.—President, John Pridgeon, jr., vice-president, John S. Quinn; treasurer, B. W. Parker; secretary and treasurer, A. A. Parker; directors, John Pridgeon, jr., A. A. Parker, B. W. Parker, Jonh S. Quinn, A. R. Munger.

Peninsular Transit Co.—President and general manager, A. A. Parker; vice-president, W. H. Oades; treasurer, Harry S. Hodge; secretary, B. W. Parker; directors, A. A. Parker, Walter H. Oades, B. W. Parker, H. S. Hodge and A. R. Munger.

State Transit Co.—President, John Pridgeon,jr.; vice-president, Joseph King; treasurer, B. W. Parker; secretary and general manager, A. A. Parker; directors, John Pridgeon, jr., A. A. Parker, B. W Parker and Joseph King.

Buffalo & Duluth Transportation Co.—President, W. C. McMillan; vice-president, W. K. Anderson; treasurer and manager, A. A. Parker; secretary, B. W. Parker, Truman H. Newberry, W. C. McMillan, W.K. Anderson.

Swain Wrecking Co.—President, L. C. Waldo; vice-president, John S. Quinn; treasurer, B. W. Parker; secretary and manager, A. A. Parker; directors, L. C. Waldo, A. A. Parker, B. W. Parker, John S. Quinn and Martin Swain.

Stewart Transportation Co.—President, George Peck; vice-president and manager, A. E. Stewart; secretary and treasurer, Charles F. Bielman; directors, J. J. Barlum, C. F. Bielman, George Peck, George Lesher and A. E. Stewart.

INVESTIGATION of the merits of Texas oil as a fuel for the American Navy has been ordered by the department. An appropriation of $20,000 is asked for the purpose of making these experiments. Admiral Melville, chief of the bureau of steam engineering, is strongly supporting the proposal. The French naval authorities are taking steps in the same direction in the shape of petroleum briquettes. This concrete form of fuel is said to be ideal, being cleanly and requiring relatively small space. Owners of American oil properties have not yet given the petroleum briquette sufficient attention. It is said to be possible that when they do so, enormous orders will be placed in the United States. It is evident that petroleum oil in one form or another has a great future in sight.

IN Europe the shipbuilders are awaking to a realization of the fact that American builders are paying higher wages, given on good authority as from 40 to 50 per cent. higher than the British scale, and 100 per cent higher than the European scale, yet by the employment of a variety of labor saving devices are able to build as cheaply as Great Britain or the continent.

# AROUND THE LAKES

## DETROIT.

*Special Correspondence to The Marine Record:*

Mr. F. F. Newman, president of the Great Lakes Towing Co. has bought the wrecking steamers Saginaw and Fairport from A. A. Parker.

There will be no trouble in the iron mining districts of upper Michigan this year. The wage scale, as now paid, is satisfactory in most cases, and there is plenty of work for all who apply at the mines, as a rule.

Detroit Local No. 3, Marine Engineers' Beneficial Association fell in line Wednesday evening with the general movement all along the lakes to increase the initiation fee and dues in order to create a larger reserve fund and be better prepared for any emergencies which may arise.

Mr. F. H. Clergue, has announced that the Algoma Steel Works, Sault Ste. Marie, Ont., will commence turning out steel rails this month. The capacity of the mill is 1,000 rails per day, and the material for the production of 50,000 tons is not in stock. The company has a contract to supply the Dominion Government with 25,000 tons of rails.

Capt. Thomas G. Simmons of Detroit, for several years past, pilot on the C. & B. line steamer City of Erie, has resigned his posittion to accpt one with the new Cleveland coal concern started some time ago by John Donaldson and Nicholas Boylan in opposition to the Pittsburg Coal Co., known as the trust. Henry Harris, formerly mate of the City of Erie, will be made pilot.

The following meteorological observations are furnished by the office of the United States Weather Bureau, Detroit, for the week ending Tuesday, February, 11th. Prevailing wind direction for the week, west; highest velocity, 28 miles from the west at 11:10 a. m. on the 8th. Mean temperature for the week 14 degrees; highest temperature, 27 degrees on the 9th; lowest, 4 degrees on the 5th.

Marine engines, hoisting engines, ship windlasses and other specialties manufactured by the Marine Iron Co., Bay City, Mich., will be found described in a special catalogue which this company now has ready for disttribution. It is 5 by 8 inches in size, well printed, and contains illustrations of various specialties referred to. Most of the illustrations are of considerable size and the text is complete, so that each specialty is sufficiently described to give an excellent understanding of it.

At the meeting the initiation fees of the lodge were raised from $10 to $25 and the annual dues from $3 to $5. While nothing has been publicly said as to the future course of the marine engineers and in explanation of the seemingly amicable adjustment of wages and other matters with the vessel owners, the engineers are not satisfied. They say that there will be no trouble this spring, that the men will all return to their boats and that the wage scale has been satisfactorily adjusted so far as the season is concerned, but the step taken by Detroit local and similar action which will be taken by other locals is for the purpose of fortifying themselves for the future.

The deal whereby the affairs of the new Detroit & Buffalo line will be managed by the Cleveland & Buffalo line at the Buffalo end of the run, was completed at a meeting of the directors and representatives of both lines yesterday afternoon. The directors of the new line authorized the signing of a contract, the terms of which will not be made public, but which Mr. W. C. McMillan, general manager of the D. & B. line, said were highly saisfactory to both parties. As the relations between the three big Lake Erie passenger lines now stand, the business of the D. & B. line at Detroit will be handled through the offices of the Detroit & Cleveland line, and the Buffalo end will be taken care of by the Cleveland & Buffalo line, all freight and passengers to be handled from the docks of the old established line.

The new White Star Line steamer, Greyhound will be launched at the Wyandotte yards of the American Ship Building Co. next Saturday afternoon, according to the present plans and the work upon her is being rushed. The biggest problem which confronts the company is how they will get the boat up to Detroit in order to put the woodwork upon her. The ice between Detroit and Wyandotte is several feet thick, and the slip into which the Greyhound will be launched is frozen to a depth of almost two feet. This will have to be cut and floated out into the river before the launching can take place, and one of the big ferries will be engaged to break the ice in the river and tow the new boat to the dock of the shipbuilding company at the foot of Orleans street, where her upper works and epuipment will be completed.

At the annual meeting of the stockholders and directors of the Kirby-Carpenter Lumber Co., of Menominee, Mich., a $1,000.00 dividend was declared for the year of 1901. This will probably be the last dividend paid by the company except on its Southern pine interests. The concern still owns 57,000 acres of timber land in Louisiana, which will bring $20 an acre. There are several men looking over it at present with a view of purchasing. The company has wound up its pine business in that locality and its big dividend accrued in part from the sale of interests in Menominee. This will probably be its last year there, and one of the greatest lumber concerns in the country will have gone out of existence. All the old officers were re-elected. A. A. Carpenter, president; S. M. Stephenson, vice president; S. P. Gibbs, secretary and treasurer.

The announcement is made semi-officially that the Northern Navigation Co., of Collingwood has acquired all the stock of the Northwest Transportation Co., known as the Sarnia, or Beatty line of steamers, which run from Sarnia to Sault Ste. Marie and Lake Superior ports. About a year ago the Collingwood Co. secured a controlling interest in the stock and so satisfactory was the business last year and so promising is it for the future, that that company lost no time in acquiring the rest of the stock. This will give the Northern Navigation Co., control practically of the Canadian tourist traffic on the upper lakes. The lines thus amalgamated will in all probability be under one management, though this point will not be definitely decided upon for a few days. New service will be put into the route by the addition of the steamer Huronic, now approaching completion at Collingwood.

The Cleveland Sawmill & Lumber Co., which was organized 30 years ago and has continually operated a sawmill at Cleveland to the first of the year, has moved its manufacturing and distributing point from Cleveland to Sarnia, Ont. During the years that the company has operated in Cleveland, it has cut from its lands in Michigan and manufactured in its Cleveland mill upwards of 1,000,000,000 feet of white pine and Norway timber. All of the land on which it had timber that could be brought to Cleveland have been cut over, but it still has in Canada upwards of 300,000,000 feet of standing white pine timber. Several years ago the Canadian government retaliated for the duty imposed by the United States on lumber, by putting an export clause on logs, prohibiting their being taken from the Dominion. This necessitated the erection of an immense plant by the Cleveland Sawmill & Lumber Co., at Sarnia, Ont., opposite Port Huron, for the manufacturing of its Canadian timber, and in the future its shipments will be from that point, although the main office will be continued at Cleveland as formerly. Following the same plan as that of Pack, Woody & Co., and Gilchrist & Co., who, upon the cutting of their timber lands, disposed of their Cleveland yards, the Cleveland Sawmill & Lumber Co. has sold its entire stock of lumber in this city to Ralph Gray. During all the years of its business in Cleveland, the company has averaged in its employ about 250 men and 400 to 500 men in the woods. It is now employing in Canada an equal number, almost all of whom are native Canadians, and Canada is the gainer to that extent.

## BUFFALO.

*Special Correspondence to The Marine Record.*

They are not going to prove to Capt. Davis, who bid off thes temer Hennepin at the auction the other day, that he paid too much for her and he is able to make others see that he was right in paying what he did for her. She is especially well adapted to the stone trade into which she is to go. After she has been cut down to a single decker her hold will be fitted with a double row of pockets or hoppers, and by an arrangement of belt conveyors running under these hoppers the Laks Shore Stone Co. expects to be able to discharge crushed stone at the low rate of one cent per ton, whereas, it has heretofore cost ten cents per ton.

The United States district court, which was to convene in Buffalo on the first Monday of February, is deferred till the third Monday, as Judge Hazelton has been called to New York. There are several important admiralty cases on the calendar, though the collision case of the steamers Curry and M. Sicken has lately been settled and the case withdrawn. The accident occurred at Buffalo on August 20 last, the Curry running into the Sicken as she lay at the Bennett elevator. Other cases to come up are the tug Erie against the steamer Homer Warrern for collision in Buffalo Harbor; R. R. Rhodes against the cargo of the steamer Alva for demurrage; owners of the tug Tecumseh and barge Marengo against the Buffalo lumber firm of Montgomery Bros. for demurrage; James Mahoney against the barge Myron Butman for personal injury.

The Buckeye Fish Co., of Cleveland, has bought 250 feet of dock frontage from the Menominee River Lumber Co., of Menominee, and will erect a big fish canning factory, to cost $30,000. The new factory will employ 150 men the whole year. The Buckeye Co., will also erect a large fertilizing establishment, and will manufacture fertilizer from fish offal. The company has already purchased two tugs and will have a fleet of small sailing vessels.

## DULUTH-SUPERIOR.

*Special Correspondence to The Marine Record:*

Deputy Collector T. B. Mills, of the port of Superior, has just been reappointed for his second term. The official appointment papers were brought here by Gad Smith, the newly appointed collector for the Marquette district.

The soft coal shortage at the head of the lakes is becoming more acute every day. The supply of the hard variety, however, is going to be ample unless there should be an unusual amount of cold weather between now and March 15. The bituminous shortage is so serious that the coal companies are piecing out their stocks as much as possible by all rail deliveries to their railway and mining customers. They do this in order to not be deprived of their stocks all at once and left without anything for the general trade.

The prospects at present are that there will be not to exceed 80 per cent. as much iron ore in stockpile at the mines of St. Louis county on May 1 as usual, but there will be more ore shipped this year than ever before in a single year. The reason for the estimated reduction of the winter output of 20 per cent. is easily guessed. The State board of equalization provided for the assessment of ore in stockpile as personal property, the same to be assessed May 1 at $1 a ton. Speaking of the present and prospective results of this, a well known mining man said:

The William Bros. Boiler & Manufacturing Co., Minneapolis, Minn., with a capital of $300,000, has been incorporated. The incorporators are William, Frederick, Joseph M. and Bernard M. Bros. The company will manufacture boilers, tanks, smokestacks and will do sheet iron, steel structural, foundry and cast iron work. The officers are as follows: President, William Bros; vice president, Frederick Bros; secretary, Jos M. Bros; treasurer, Bernard Bros. The company announces the erection of a large manufacuring plant in Southeast Minneapolis and it is now in process of construction.

The lumber market has opened for the season of 1902 and apparently with a rush. In the last few days some very large deals have been closed. It is reported that A. A. Bigelow & Co. have closed out their entire season's cut of white pine lumber No. 3 and better. This will amount to about 25,000,000 feet and perhaps 5,000,000 over this amount. The consideration is not known, but a fair amount to place on this sale would be about $500,000 Moore, Keppel & Co. of Port Wing have also closed their entire cut of logs for this winter, including what stock was left over from last year, in all about 18,000,000 feet.

The boom in the price of lumber which has been on for several years, has apparently reached a climax in the Duluth market. The prices have attained a plane where the Canadian product, regardless of a $2 tariff, comes in competition with Duluth lumber in the eastern markets. Few important sales have been made in this market for some time, but two lumber concerns in the United States alone have bought an aggregate of 240,000,000 feet of Canadian lumber recently. A Saginaw firm has bought 140,000,000 feet of Canadian lumber for delivery there, and a Boston firm has bought 100,000,000 feet for delivery in Tonawanda. These two purchases are equal to one-half the entire cut of the Duluth-Superior mills for a season.

Capt. W. H. Singer has been visiting lower lake ports in quest of a steamer for his White line on Lake Superior. He has visited Detroit and Cleveland, and has seen some steamers that will answer his purpose. The names of the craft he will not divulge, but it is probable that at the opening of navigation next season one of the lower lake boats will be brought here. Capt. Singer says it is his intention to get only an up-to-date steel vessel about 200 feet long. This vessel will probably be put on the run between Duluth and Isle Royale. The business has outgrown the facilities possessed by the White line at present. Isle Royale, which has lately come to the front as a tourist resort, is the direct cause of the increase in business. The island is controlled by an English syndicate, who secured it for the purpose of mining copper, but later turned it into a summer resort.

Deputy Port Collector T. B. Mills has a big kick to make regarding the official court report for the harbors of Duluth and Superior. Between the local report, and the report for Superior as given by Capt. Gaillard, there is a discrepancy of nearly $13,000,000, and Superior is the loser in the transaction. Collector Mills has written Capt. Gaillard concerning the matter and has sent him a synopsis of the two reports, and in every way it shows that the report issued from the Duluth office credits Superior with less business than does the local report. Capt. Gaillard has replied in rather indefinite terms, and the matter will be further investigated when the port officer who had charge of the Superior reports in the Duluth office returns to duty. An attempt will then be made to see just where the trouble lies. The local figures were obtained with painstaking care, and their accuracy was corroborated in every manner possible. First, the captain's manifest was taken, then the supplementary manifest was examined, and finally the figures were compared with those of the shippers and receivers, who must, of necessity, keep accurate accounts. In only one commodity did a difference fail to appear, and that was in coal. In that part of the report, the amounts credited to Superior for anthracite and bituminous coal, in both reports, tallied to a pound.

One of the most interesting developments of the last year on the Mesaba iron range has been the struggle of the Eastern Minnesota railroad, owned by James J. Hill, to assure itself on a permanency for its ore traffic. With the formation of the United States Steel Corporation, Mr. Hill saw that his investments in ore roads and terminals, as well as the exceedingly remunerative ore traffic itself, were menaced, for the reason that the two roads controlled by the steel corporation would handle all of its business and take from his road traffic from mines that were the property of concerns becoming constituents of the combination. In order to prevent being put out of the ore business entirely, Hill set about taking lands on the range, buying fees, and options on leases of every character. This policy is being continued, and is being pushed vigorously. The Eastern Minnesota road has purchased outright a great many tracts on the formation, has explored and bought many more, and has taken lease right and left.

"The reduction of 20 per cent. in the aggregate output is an important loss to the rangers, and at a time of year when it is felt most acutely. Of course the 20 per cent. held back will show up and more with it before the end of the shipping season, but it will come at a time when there is plenty of work for everybody In winter it is different. Then it is that the greatest activity in the mines is desired in order that as many men as possible may be employed. It would be a great help to the range towns if the mines were free to work as heavy in winter as their operators would like. The owners of underground mines are standing for a real tax on their mining property and for a personal property tax on their ore in stockpile. The open pit mines, which have no stockpiles, are taxed as real estate and that is the end of it. It is likely that ore shipping to the docks will begin as early as possible in the spring. Such ore as is moved from the stock piles before May 1, will escape the personal tax assessment, but the ore that will be thus moved, will not be a very big item, and the companies may not move any for the purpose of escaping the tax.

The steamers Bon Ami and Hunter are still making trips along the north shore of Lake Superior. The former belongs to the White line and the latter to the A. Booth Co. Ice is beginning to get plentiful in the lake and it is expected that in the course of a week or ten days the Duluth-Superior harbor will be closed to the steamers. But that will not stop them from operating on the lake, and when they can no longer reach Duluth they will run between Two Harbors and the other north shore ports that are still open. This arrangement will have the advantage of allowing them to run longer this winter and of starting out earlier in the spring. Two Harbors is usually open to navigation earlier than Duluth, as the northeast winds usually hold the heavy ice off that port until quite late. The Bon Ami laid up February 9 last winter. That was the date of her last arrival at Duluth on her last trip. She will easily break this record the present year by running from Two Harbors, if the ice at the end of the lake shuts her out of Duluth. Both the Bon Ami and Hunter have done a very good business this winter. They have carried large quantities of supplies and many passengers.

Messrs. Corrigan, McKinney & Co., of Cleveland, extensive independent iron ore operators, have added another property to their Mesaba range holdings. The property acquired is known as the Phoenix mine, though it has not been developed. The fee is owned by Hiram Sibley, of Rochester, N. Y., and the lease is owned by the Phoenix Mountain Iron Co., of which A. C. Hubbell and Thomas A. Merritt were the principals. The lease was sold by them to Corrigan, McKinney & Co. for a bonus of about $110,000, and the royalty is 20 cents The minimum output for this year is said to be about 50,000 tons, and each year thereafter 100,000 tons. Merritt and Hubbell have shown up a good deposit of about 3,000,000 tons of good Bessemer ore. The propery is situated a few miles east of Hibbing. It is learned that the Eastern Minnesota Great Northern interests are to increase their new ore dock on Allouez Bay, Superior, 6,000 feet, adding 100 pockets, representing 30,000 gross tons, giving the entire dock a storage capacity 100,000 gross tons. This will make the dock the largest ore shipping structure in the world. It is also the highest, being 72 feet from the water to the top of the rails. It is expected that the addition will be ready for receiving and shipping ore by June 1. The Eastern Minnesota road expects to ship 3,000,000 tons the coming season. Duluth, at present, has the largest ore docks in the world, two exactly alike, owned by the United States Steel Corporation.

---

Three Sault Ste. Marie men, George O. Comb, H. E. Westlake and Harry Kemp, have been awarded $240 damages by the United States district court at Washington, because of privations suffered on the steamer Tacoma while en route from Nome to Seattle in the fall of 1900. They paid for first class accommodation, but instead were treated like steerage passengers, being compelled, they alleged, to sleep wherever they could find a place, and to eat unpalatable rations, which almost starved them, and caused them to lose flesh during the voyage, also made memorable by a serious storm. On reaching Seattle they libeled the boat, and then brought suit for damages, the case having just been decided.

## CLEVELAND.

*Special Correspondence to The Marine Record.*

Some ore has been chartered this week at 80 cents from the head of Lake Superior. The big syndicate offers 75 cents and expects to get all the tonnage they require, at that figure.

W. G. Spence & Bros. of Cleveland have purchased the schooner Celtic from D. G. and Orrin Jackson of Bay City, consideration private. The Celtic was built by James Davidson in 1891, measures 680 tons and is rated A1.

Notwithstanding reports to the contrary, Mr. J. C. Wallace, president of the Drydock Association, says that the rates adopted at the annual meeting held here in January are still in force and that no change has been made from last season's charges.

Capt. H. A. Hawgood went to West Bay City last Friday to attend on Saturday the launching of the steamer Etruria, for the Hawgood Transit Co. This is the first one of the Hawgood boats now being built that will be set afloat this year. She will be ready for the season of navigation.

Capt. W. C. Richardson and party has gone south to spend a month at the resorts of Florida. He will stop at Palm Beach first, and will then take in the whole line of Florida east coast resorts. With him will be his daughter, Mrs. Payne, and Mrs. Haskell, of Ashtabula, and Capt. and Mrs. Herriman.

Pickands Mather & Co., of this city, are not losing any time in getting facilities at the Lake Erie ports to take care of the big increase in business in the lake carrying trade. By the opening of navigation in 1903 they will have three new modern docks at Lake Erie ports equipped with the latest improved machinery for the rapid handling of ore and coal.

Harbor Master Peter Lynch has received the following letter from William J. Carter, chief engineer of the department of public works: "Please notify all vesselowners and interested parties that from February 6th to March 13, inclusive, the only bridges that will be opened after 3 p. m. until 7 a. m. are Main, Willow, Center and upper Seneca.

William Livingstone, of Detroit, the president of the Lake Carriers' Association, was in the city yesterday for a while. He was in conference with Capt. George P. McKay, the treasurer, most of the day, and was with some of the prominent vessel owners during the afternoon. The matters under discussion pertained to the policy of the organization the coming year.

The statement was made by T. F. Newman, general manager of the Cleveland & Buffalo Transit Co., that they expect to make their first run to Buffalo this year about April 1. The announcement is a little early, but Mr. Newman says he usually counts upon being able to start on that date and keep going until December 1, and he proposes this year to keep as close to the precedent as possible.

It is expected this year that the movement of ore will be about 22,000,000 tons. Of this amount the producers have tonnage to move about half. Two million tons have already been covered by contracts, leaving, therefore, wild on the lakes for which boat space is needed, 9,000,000 tons. Of this amount the steel corporation and those who are waiting for it to act control about 7,000,000 tons.

The work on the new dock of the National Dock and Fuel Co., of Cleveland, is progressing so satisfactorily that it is now assured that it will be in operation by the opening of navigation. This dock is to be situated on the lake front, just East of the Ellsworth plant, and will be fitted with a McMyler fast car dump of the most improved pattern. It is expected that the machinery will be able to load 1,000 tons an hour.

At the annual meeting of the Cleveland-Cliffs Iron Co., held January 22, the following officers and directors were re-elected: President and treasurer, William G. Mather; vice president, J. H. Wade; secretary, J. H. Sheadle; auditor, R. C. Mann; J. H. Wade, Wm. G. Mather, J. H. McBride, E. R. Perkins, S. E. Williamson, W. S. Tyler, J. H. Hoyt, Samuel Mather, Peter White. The company has a paid-in capital stock of $3,814,700.

Users of marine glasses should send for a copy of the booklet issued by the Warner & Swasey Co. They will find much information regarding the new prism glasses, and they will be surprised at the value of these glasses for use in studying the stars at night. It is also particularly interesting to learn the manner in which the prism glasses are constructed and why they are so much more powerful than the former style of marine glasses.

The following meteorological observations are furnished by the office of the United States Weather Bureau for the week ending, January 5th: Prevailing wind direction for the week, southwest; highest velocity, 42 miles from the west on the 2nd; mean temperature for the week, 15 degrees; highest temperature, 28 degrees on the 2nd; lowest, 4 degrees on the 3rd. Sunrise and sunset data computed for local time: February 7th sun rises, 7:06, sets, 5:23; February 10th, sun rises, 7:02, sets, 5:28; February 13th, sun rises, 6:59, sets, 5:31.

Those who have been prominent in the endeavor to form a trust of the dredging companies have spent some time in Cleveland during the past week in an effort to get together. They went away Wednesday night without having come to any conclusion further than that the general proposition is still an attractive one, and they will try to bring the organization to a head before the middle of the summer. The promoters are gradually getting rid of the things that have hindered the movement, and hope soon to get the big company formed.

The following meteorological observations are furnished by the office of the United States Weather Bureau for the week ending February 12th: Prevailing wind direction for the week, southwest; highest velocity, 37 miles from the southwest on the 7th; mean temperature for the week, 17 degrees; highest temperature, 27 degrees on the 7th; lowest, 7 degrees on the 8th. Sunrise and sunset data computed for local time: February 14th sun rises at 6:58, sets, 5:32; February 17th sun rises at 6:54, sets 5:35; February 20th sun rises at 6:50, sets 5:39.

Connected with the appointments of the masters of the boats owned by the Pittsburg Steamship Co., of a few days ago, was the announcement of the wages to be paid during the season. The Pittsburg fleet has put its masters upon yearly salaries, instead of paying them by the month, and the boats have been classified. Masters of steamers will obtain $1,800, $1,600 and $1,400 yearly respectively for first, second, and third class steamers. Masters of barges will be paid $1,200, $1,080, and $960 yearly respectively for first, second and third class barges instead of $100 a month, as obtained last year.

Major Kingman, Corps of Engineers, U. S. A., has written to the department at Washington for the privilege of advertising for bids to do the work of cleaning up the channels at the three ports of the district lying east of Cleveland, namely: Fairport, Ashtabula and Conneaut. It is the desire of Major Kingman to have the permission to do this work that the dredging companies may be under contract to start the work as soon as the weather permits. In taking this action Major Kingman is actuated by a desire to prevent, if possible, any delay to the vessel owners by reason of their boats not being able to get into or out of any of thise harbors.

The stockholders of the Pioneer Steamship Co. and the Buckeye Steamship Co. held their annual meeting last week and re-elected their former officers, as follows: Pioneer Steamship Co.—Directors, J. T. Hutchinson, John B. Guthrie, Walton McGean, Thomas F. Griffin and Charles L. Hutchinson; president, J. T. Hutchinson; vice president, John B. Guthrie; secretary, Walton McGean; treasurer and general manager, Charles L. Hutchinson. Buckeye Steamship Co.—Directors, W. S. Manuel, Martin Mullen, John B. Guthrie, Capt. John McNeff, Charles L. Hutchinson; president, W. S. Manuel; vice president, John B. Guthrie; secretary, treasurer and general manager, Charles L. Hutchinson.

Mr. Evan Jenkins, second vice president of the Marine Engineers' Beneficial Association, returned on Tuesday from a trip to Lake Michigan, where he visited all the leading ports. He found the lodges to be in good shape and all the members that have made contracts for the coming season have signed at the rates adopted by the association. The Goodrich Transportation Co. has agreed to pay the engineers' schedule and all the men of that line have signed contracts for 1902. Mr. Jenkins said that most of the members of the association have made arrangements for the coming season and that there is no indication of any trouble. A smoker will be given at the local lodge rooms Saturday evening.

The steel steamer Etruria, built to the order of the Hawgood Transit Co., was successfully launched from the yards at West Bay City. She measured 434 feet over all; 414 feet keel, 50 feet beam; and is 28 feet deep. She will have triple expansion engines with cylinders 22x35x58 inches and with a 42-inch stroke. She will have an Ellis & Eaves induced draft. The new steamer will be in charge of Capt. Thomas C. Ellis and R. B. Buchanan, chief engineer. Capt. Ellis spent six years in the Servia and seven years in the Williams, as captain, and all the while under the Hawgoods. Last year the Williams was purchased by Capt. Gilchrist and Capt. Ellis was employed to handle her, but he has gone back to his old company, to take charge of the first boat out. He has been on the lakes forty years and served three years in the government survey steamer, Search.

The legality of the ice clause in marine insurance is at stake in a suit on trial in Judge Dissette's court, in which the Corrigan Transit Co., is plaintiff and the Chicago Insurance Co. is defendant. On April 2, 1898, the schooner North West was struck by a large cake of ice while being towed through the Straits of Mackinaw by the steamer Aurora. The schooner went down in four fathoms of water and the owners have sued for $18,000 insurance. The insurance company claimed that there is nothing due because there is a clause holding the insurance company free from damages or loss incurred while navigating when such damage or loss is sustained by or in consequence of ice, unless the vessel is fitted to encounter ice. The claim is made that the North West was not plated to protect it against ice floes. Capt. Donaldson, master of the Aurora, told of the disaster to the North West.

## LIFE-SAVING STATION NEEDED.

Congress has been asked for an appropriation for a life saving station at Eagle Harbor by the Masters and Pilots' Association. It is one of the final steps to secure something that is badly needed and which is favored by all marine men who have any business with boats traveling the course around Keweenaw point during the season of navigation. The Detroit Free Press says:

The movement for a station at Eagle Harbor, or one near the point, has been agitated by lake captains and others for several years, and it would now appear that the time is not far distant when their hopes in this respect will be realized. The coast of Eagle Harbor has long been regarded as one of the most dangerous points on the lakes, and during the last season of navigation many lives were lost off this point. The list would have been much larger had it not been for the heroic work of the brave crew at the ship canal, who, on more than one occasion, covered the long distance between their station and this point and rendered valuable assistance.

The Hudson, one of the finest steamers on the lakes, went to the bottom in a gale off this point, carrying with her every member of her crew. Had there been a life saving station at Eagle Harbor the crew might have been saved. The tug Fern was also lost at this place, and all aboard perished. There have been other wrecks in which lives have been lost in this vicinity, and during last season a large whaleback had a very narrow escape there. There has always been more need of a life saving station in the vicinity of Eagle Harbor than at the ship canal. The past season's record certainly indicates such to be the case.

The number advocating the removal of the present station at Portage Lake canal to Eagle Harbor are few, but those who desire to see a new station established at the latter place are many. Capt. McCormack of the canal station is authority for the statement that his station is more important than any five stations on the lakes, for the reason that it has more and dangerous territory to attend to. But one accident can be recalled that was within the reach of the life savers at the canal, and that was the burning of the steamer Bon Voyage last May, but hardly a season has passed but that the crew at the canal has been called upon to travel overland or by boat to Keweenaw county ports to lend assistance.

Again, scarcely a season passes without there being one or more serious wrecks along the shores of Keweenaw, and usually the crew of the ill fated vessel is compelled to battle with the elements unaided. Too much time is required to get word to the station at the canal and to get the men to the place needed. The Masters and Pilots' Association is acting in good time in its efforts to have a station established at Eagle Harbor, and there is good reason to believe that the governmnent will afford the protection desired.

## ST. LAWRENCE BRIDGE.

Post negotiations have almost been completed in New York and in Canada for the construction of a bridge across the St. Lawrence river at Montreal, which is to be one of the largest of its class in the world. The bridge to be constructed is the Royal Albert bridge from Montreal to Longueguil, and the Montreal Bridge Co. has entered into a contract with the Atlas Construction Co. to erect it. This latter company was incorporated under the laws of New Jersey on January 25, with $15,000,000 capital.

In taking over this contract the company has bought out all the old interests which were held by C. N. Armstrong. The construction company plans to begin work on the bridge as soon as aid, already pledged by the province of Quebec and the city of Montreal, becomes available. The estimated cost of the bridge, with its terminals, is $10,000,000.

The total length of the bridge is to be 8,800 feet. The main span, a cantilever, which will be the largest of its kind on the continent, will be 1,260 feet long. The height of the bridge above the water will be 150 feet, and its width 83 feet, divided as follows: A double track railway, 26 feet; a double track electric railway, 22 feet; a double highway, 23 feet and two sidewalks, 12 feet. The weight of steel in the structure will be about 74,000,000 pounds, and there will be 90,000,000 yards of masonry.

The railroads which will be benefited by the new bridge ore: The New York Central, Delaware & Hudson, Rutland, Boston & Maine, Rome, Watertown & Ogdensburg, Great Northern of Canada, Canadian Atlantic, South Shore, Atlantic & Lake Superior, Great Eastern, St. Chrysotone line, Southern Counties, Montreal Terminal, and the Montreal Street railway. The Canadian Pacific might be mentioned, inasmuch as this road is extending its car-building plant and repair shops in the east end of Montreal, adjacent to the proposed terminal of the Royal Albert bridge.

At the meeting of the concilliation board of the North of England iron and steel trade in London, January, 27th, Thomas Bayley, M. P., speaking in behalf of the ironmasters, appealed to the workers to support the employers in their effort to recapture the world's trade. He said some employers had spent £60,000 during the past year in improving their plants, and it only remained to secure the loyal co-operation of the men. Mr. Cox, responding for the men, said he would promise that there would be no restriction of output. The men would welcome any improvement aiding them in the coming contest for the world's supremacy.

## ESTIMATED VALUE OF FREIGHT THROUGH PORTAGE LAKE SHIP CANALS FOR THE SEASON OF 1901.

| Items. | Quantities. | Price Per Unit. | Valuation. |
|---|---|---|---|
| Coal, (Anthracite), net tons | 102,385 | $ 5 50 | $ 563 117.50 |
| " (Bituminous), " | 809 673 | 3 30 | 2,671 920.90 |
| Flour, barrels | 283,730 | 4 00 | 1,134 920 00 |
| Wheat, bushels | 901, 50 | 72 | 649 044 00 |
| Grain, (other than wheat), bu. | 474 055 | 50 | 237 027.50 |
| Manufactured Iron, net tons | 7 086 | 60 00 | 425 160.00 |
| Pig Iron, net tons | 3 622 | 16 00 | 57,952.00 |
| Iron Ore, " | 80 386 | 2 25 | 180 868.50 |
| Salt, barrels | 125,293 | 75 | 93 969 75 |
| Copper, net tons | 78,354 | 335 00 | 26 248 590.00 |
| Building Stone, net tons | 67,231 | 6 50 | 437,001.50 |
| Sand, net tons | 14 950 | 75 | 11,212.50 |
| Machinery, net tons | 1.235 | 300 00 | 370,500.00 |
| Oils, barrels | 43,418 | 6 00 | 260 508.00 |
| Limestone, net tons | 40 983 | 1 50 | 61,474 50 |
| Lumber, M. ft. B. M. | 314.635 | 15 00 | 4,719.525 00 |
| Logs, " " | 18 074 | 11 00 | 198 814.00 |
| Unclassified Freight, net tons | 148,439 | 125 00 | 18 554.875.00 |
| Total | | | $56,876 480.65 |

FREIGHT BOUND UP AND DOWN AND VALUATIONS FOR THE SEASONS OF 1895 TO 1901, BOTH INCLUSIVE

| | Bound up Net Tons. | Bound Down Net Tons. | Total Fr't Bound up and Bound Down. | Total Valuation of Freight Bound up and Bound Down. |
|---|---|---|---|---|
| 1895 | 560.672 | 363 084 | 923 756 | $29,832.367.70 |
| 1896 | 635.6 6 | 406.327 | 1,041,933 | 29,953,787.02 |
| 1897 | 730,843 | 289,880 | 1.020,723 | 34,044,268 85 |
| 1898 | 960,924 | 406,761 | 1.367,685 | 39.254 415 50 |
| 1899 | 974 328 | 607,841 | 1.582,169 | 54.994,843 70 |
| 1900 | 1,190 527 | 677 245 | 1 867 772 | 57,380 129 05 |
| 1901 | 1,246,576 | 867,8c9 | 2,114 38[illegible] | 56.876,480.65 |

D D. GAILLARD,
Captain of Engineers, U. S. A.

CONDENSED STATEMENT OF VESSELS RECORDED DURING THE NAVIGATION SEASONS OF 1895 to 1901, BOTH INCLUSIVE

| | | 1895 | 1896 | 1897 | 1898 | 1899 | 1900 | 1901 | Totals. |
|---|---|---|---|---|---|---|---|---|---|
| Steam, | Bound up | 1,631 | 1,695 | 1,432 | 1,803 | 1,793 | 1,788 | 1,686 | 11,828 |
| Sail and Tow, | " " | 338 | 362 | 283 | 405 | 5[illegible]2 | 566 | 626 | 3,082 |
| Total, | " " | 1.969 | 2,057 | 1,715 | 2.208 | 2 295 | 2.354 | 2,312 | 14,910 |
| Reg. Tonnage, | " " | 703,156 | 735,974 | 726,169 | 939,396 | 938 739 | 1,168 695 | 1,252,625 | 6 464 754 |
| Steam, | " Down | 1 341 | 1,37[illegible] | 1 085 | 1,479 | 1.437 | 1,365 | 1.301 | 9 381 |
| Sail and Tow, | " " | 138 | 139 | 131 | 222 | 199 | 301 | 308 | 1,438 |
| Total, | " " | 1 479 | 1,512 | 1,216 | 1,701 | 1,636 | 1,666 | 1,609 | 10,819 |
| Reg. Tonnage, | " " | 310 504 | 340,574 | 299 206 | 507 820 | 429,144 | 580,596 | 640,276 | 3,108,120 |
| Total Bound up and Down | | 3 448 | 3,569 | 2 931 | 3 909 | 3.931 | 4 020 | 3 921 | 25 729 |
| " Registered Tonnage | | 1,013,660 | 1,076,548 | 1,025.375 | 1,447,216 | 1,367.883 | 1,749 291 | 1,892 901 | 9 572 874 |

## APPRECIATION.

The forty-fourth anniversary number of the Age of Steel, under date of January 4, is replete with ample evidences of extraordinary excellence and enterprise. From the following index of rich and varied contents it is difficult to discriminate: "The Age of Steel," by John Birkinbine; "Iron Ore Production," by Horace J. Stevens; "The Future of Steel," by J. L. Van Ornum; "Zinc and Lead Mining," by Frank Eberle; "The Beaumont Oil Fields," by F. W. Greer; "The World's Progress in Science, Industry and the Arts in 1801," by Robert Grimshaw; "Alabama Iron and Related Industries," by L. W. Friedman; "American Hydro-carbon Vehicles," by James F. Hobart; "Foundry Flasks," by P. R. Ramp; "Brief Review of the Foundry Business," by E. D. Gilmour; "Steel Ship Building During the First year of the Century," by Waldon Fawcett; "The Development of Industrial Fuels," by William G. Irwin; "Our European Competitors in the Markets of the World," by Dr. Richard Moldenke; "The Year's Record in Iron and Steel in the Pittsburg District," by Wm. Gilbert Irwin; "Grading of Pig Iron—Its Past, Present and Future," by Herbert E. Field; "The Iron trade Situation in Europe," by J. Stephan Jeans; "Department of Mines and Metallurgy of the World's Fair at St. Louis," by David T Day, chief of the department of mines and metallurgy; "Cincinnati Machine Tool and Other Industries"; "The Story of Hardware in 1901;" "Reports From Manufacturers on Trade Conditions," together with their views on certain national questions.

The tradesman regrets this rather tardy tribute to its esteemed contemporary, the above having been crowded out of its issue of January 15.—The Tradesman.

Around the world in 60 days 13 hours and 30 minutes is the new globe-girdling record, which was completed last July by Charles C. Fitzmorris, a Chicago high school boy. This beat the best previous fast circuit of the world by several days.

## AMERICAN SHIPMASTER.

HAMILTON CAN., Feb. 4, 1902.

*To the Editor of The Marine Record:*

Can the holder of a Canadian Master's Certificate take command of a U. S. Ship without passing another examination, after holding intention papers and residing in the states five years, or does it entitle him to any privileges on ships of the United States. Kindly answer the above question in the RECORD and you will oblige.

SUBSCRIBER.

A foreign certificate is not acknowledged or recognized in the United States. Let us quote the United States' Statutes as follows:

"All the officers of vessels of the United States shall be citizens of the United States, except that in cases where, on a foreign voyage, or a voyage from an Atlantic to a Pacific port of the United States, any such vessel for any reason deprived of the services of an officer below the grade of master, his place, or a vacancy caused by the promotion of another officer to such place, may be supplied by a person not a citizen of the United States until the first return of such vessel to its home port; and such vessel shall not be liable to any penalty or penal tax for such employment of an alien officer."

An American certificate is necessary to take charge of a vessel under the United States flag.

## WORLD'S FAIR CLASSIFICATION SHOWS THE MARVELOUS ACTIVITY OF THE HUMAN RACE.—EVERY ART AND INDUSTRY HAS A PLACE.

An advance copy of the Classification Book for the Louisiana Purchase Exposition at St. Louis in 1903 has been received. Fifty-three pages are required for a mere enumeration of the groups and classes of exhibits. The exhibits of the entire exposition are divided into fifteen departments as follows: education, eight groups; art, six groups; liberal arts, thirteen groups; manufactures, thirty-four groups; transportation, six groups; agriculture, twenty-seven groups; horticulture, seven groups; forestry, three groups; mining and metallurgy, five groups; fish and game, five groups; anthropology, four groups; social economy, thirteen groups; physical culture, three groups. The total shows 144 groups and 807 classes, and under each class is a possibility of a multitude of exhibits. Nothing reflects more clearly in so small a space the variety of human occupations or more comprehensively the broad scope of the great exposition which the people of St. Louis are preparing for next year. A place is provided for every conceivable product worthy of exhibition and all nations of the world have been invited to take part. Acceptances have been received from many. The work of construction is progressing earnestly. The buildings have an aggregate floor space of 200 acres and the grounds a total area of 1,000 acres. The money available now aggregates $15,000,000, besides $1,000,000 appropriated by the State of Missouri and various liberal sums from other states. The Classification and Rules and Regulations of the Exposition will be mailed free on application to the Director of Exhibits, World's Fair, St. Louis.

## RUSSIAN MERCANTILE MARINE.

Consul-General Holloway writes from St. Petersburg, December 10, 1901:

The report of the Minister of Marine, just published, states the Russian mercantile marine consisted on January 1, 1901, of 745 steamers and 2,293 sailing vessels. Last year, 38 steamers or 35,193 registered tons were added to the mercantile fleets of the Baltic and Black seas, while the increase in the Caspian and White seas was but trifling. Of the total steam tonnage, 59 per cent. is owned by companies and 21.9 per cent. by private individuals. The largest steamship firms are those working on the Black sea. The Russian Steam Navigation and Trawing Co., of Odessa, possesses a fleet of 72 steamers, representing a total of 67,654 registered tons; the Russian East Asiatic Co. has 3 steamers, aggregating 12,618 tons; the Russian Baltic Co. has 5 steamers of 7,896 tons; the Archangel-Murman Co., 13 steamers of 6,233 tons; the Orient Transport Co., 25 steamers of 13,702 tons; and the Caucas and Mercury Co., on the Caspian Sea, 20 steamers, representing 11,934 tons. These are the chief Russian maritime companies, exclusive of the volunteer fleet of 14 steamers of 45,209 tons.

## BRITISH MERCHANT SHIPPING.

Sir John Glover read a paper before the Royal Statistical Society, London, last week, on tonnage statistics of the decade 1891-1900.

In his opening remarks he reminded his audience that this was his fifth paper on the subject, thus completing statistical records from 1851 to 1901.

Entrances and clearances show that the total tonnage entered and cleared (steam and sail) in ballast, and with cargoes, at ports in the United Kingdom was, in 1850, 39,634,000 tons; in 1870, 73,198,000 tons; in 1890, 164,340,000 tons; and in 1900 (exclusive of British vessels employed as transports, which represented 1,571,969 tons), 208,777,000 tons. The increase for the half century is more than five-fold. The coasting traffic for 1900 was 110,254,000 tons, representing an increase of 20,198,000 tons over 1890, or a percentage of 22.43. The entrance and clearances in the foreign trade in 1900 amounted to 98,523,000 tons (exclusive of transports), being an increase of 24,240,000 over the 1890 figures, or a percentage of 32.63. These figures represent an increase of nearty seven-fold in the entries and clearances "foreign." The tonnage reported entered and cleared with the cargoes only is about 80,000,000 tons, against 63 millions in 1890, and 12 millions in 1850. British tonnage entered and cleared with cargoes at U. K. ports from and to foreign countries rose from 8 millions in 1850 to 12 millions in 1860; 22 millions in 1870; nearly 36 millions in 1880; 46 millions in 1890, and in 1900 over 52 millions. Foreign tonnage movements were even more remarkable, increasing from under four millions in 1850 to nearly 8¾ millions in 1860; over 9¼ millions in 1870; 13¾ millions in 1880; nearly 16½ millions in 1890, and reached 27½ millions in 1900.

The lecturer submitted a series of valuable tables illustrating the development of the mercantile marines of the maritime powers, and it is shown in one of these that in entries and clearances of foreign vessels with cargoes at U. K. ports, Norway heads the list with 5,700,197 tons; Germany following with 4,361,507 tons; Sweden coming next with 2,988,239 tons. The proportion of British to the whole was, in 1900, 65.53. Taking entries and clearances of steamers only the proportion of British to the whole comes out thus:—1860, 84.5 per cent.; 1870, 88.4; 1880, 84.1; 1890, 80.31; and in 1900, 68.54 per cent. This latter falling off with increase in the steam tonnage movements of other nations in our ports is due to the purchase by them of many of our old steamers—a satisfactory condition. In showing the total steamer entries and clearances under all flags with and without cargoes, it was pointed out that of the whole tonnage 90,299,441 (less transport tonnage 60,302,653 tons), or 66 per cent., was British. In 1850 ships sail and steam, registered in the U. K. numbered 25,984, with a tonnage of 3,564,833; in 1880 there were 25,185 vessels of 6,574,513 tons net, and in 1900 there were 19,751 vessels of 9,280,164 tons. In 1850 the average size of steamers was 140 tons, and in 1900 it was 785 tons. Sailing ships' average tonnage rose from 130 to 196 tons. This latter is less than in 1870 and 1890, and about equal in 1880. Thus, while the size of sailing vessels in decreasing that of steamers is increasing rapidly the result is that our effective carrying power has grown from five and one half million tons in 1850 to twenty-four million tons in 1900. In the last decade the effective tonnage increase is 33 per cent., and compared with 1880 it has doubled. In order to prove that no decadence was exhibited in trade with foreign countries the lecturer gave statistics showing that British ships do a very large percentage of the carrying trade abroad. Thus in Russia entries and clearances under the British flag amounted to 44.7 per cent., while that of all other flags was 45 per cent. In Norway the proportion was 12 per cent, in 1399; in Sweden, 61.7 per cent. The trade of Germany in 1889 was 28 million tons, of which 47½ per cent. was done by the German flag, nearly 30 per cent. by the British flag, and 22.6 by other flags. The total entries and clearances at French ports amounted in 1899 to 36,692,812 tons. The French proportion of this was 28.4 per cent., whilst for 1890 the total was 28,967,848 tons, and her proportion was 31.9 per cent. In 1850 the United States did nearly 60 per cent. of the entries and clearances in U. S. ports; by 1860 it was 70.8 per cent. In 1870, owing to the war and other causes, this percentage had fallen to 38.2; in 1880 it was 18.9 per cent.; and in 1900 it was 21.9 per cent. In the case of Portugal, the United States, Russia, Holland, Belgium and France, the entries and clearances under the British flag are greatly in excess of the national flag; but in the case of Germany, Italy, Norway and Sweden the larger proportions are under the national flag. Holland as a maritime nation appears to be declining, but it is difficult to assign a reason. Of the entries and clearances at Dutch ports, 25 per cent. were native, 44.6 were British, and 30.4 were other nationalities. British tonnage at French ports exceeds all other foreign tonnage put together, "and," Sir John said, "if we could be assured that the bounty system would secure the same results always, it would suit us that it should be extended to other states." It is a remarkable fact that notwithstanding the large increase in tonnage entered and cleared at American ports since 1860, the amount under the American flag remains practically the same, being 12,087,209 in 1860, and 12,344,570 in 1900. The total had risen in the meantime from over 17 million tons to nearly 56½ million tons. Although all other maritime countries increased their proportion of steam tonnage during the decade, France, owing to her bounties, fell back from 67.7 to 65.4. Norway advanced from 11.7 to 34.8. The shipbuilding returns show that in 1900 steam tonnage built in the United Kingdom amounted to 1,088,405 tons; sailing tonnage 158,370 tons—or a total of 824 vessels and 1,241,775 tons. The United States follows with 58,903 tons steam and 89,975 tons sail, or a total of 175 vessels and 148,878 tons. The total number of vessels built during the year was 1,362, aggregating 1,646,809 tons. In 1900, out of a total of 1,285 vessels with a total tonnage of 2,268,938, this country (including colonies) produced 689 vessels and 1,471,475 tons, of which only 37 vessels of 12,103 tons were sail. The British proportion is therefore 64 per cent., of which 99.2 per cent. was steam. In the latter year the United States produced 197 vessels, aggregating 297,931 tons. Steel has almost entirely superseded iron in ship construction. The removals from United Kingdom registry for the ten years numbered 4,029 steamers of 3,320,765 tons, and 6,483 sailing vessels aggregating 1,776,100 tons.

Coming to the number of men employed in steam and sailing vessels in the home, foreign, and fishing trades belonging to the United Kingdom, Isle of Man, and Channel Islands, it was shown that in 1850 there were 8,700 in steam and 142,730 in sail. In 1860 there were 26,105 men in steam and 145,487 in sail, and of these 157,312 were Britishers and 14,280 were foreigners. In 1890 there were 129,366 men employed in steamers and 84,008 in sailers, and of these 174,532 were British and 36,893 were foreign. This is exclusive of Lascars, who numbered in 1900 36,023, making the total number of men employed 247,448. The proportion of foreigners employed in 1870, exclusive of Asiatics, was 9.2 per cent., in 1880 12.1 per cent., in 1890, 12.7 per cent., and in 1900 17.4 per cent. Including Asiatics as foreigners, or as British, these proportions would vary considerably.

France led in the bounty system, and pays enormous sums for the privilege of having a mercantile marine. Without bounties, the German lines to East Africa and Australian ports could not have been run. In 1890 Japan paid £153,563 in bounties, and by 1899 this had increased to £584,696. In concluding his exhaustive paper, Sir John emphasized two points, viz., coal supplies and food supplies. As to the first named there is every reason to be satisfied that, owing to the working of coal in other parts of the Empire and in foreign countries, we are not now solely dependent upon our own coal measures. America is said to be raising as much coal as ourselves, while eastward of the Red Sea it may be said that the bulk of the coal consumed is either Indian or Japanese. It is consequently reasonable to conclude that the supplies of coal will not fail such nations as have the means for its cheap carriage by sea. It is perhaps even more reasonable to expect that before long more economic methods of using coal will be discovered. The use of petroleum for sea propulsion seems to be on the eve of a large development; and when electric power has got fairly into use on land it is quite possible that means will be devised for its use at sea. Whether one thinks of coal as a factor in shipping or in national defence there are no grounds for pessimistic fears, whatever reasons there may be for watchfulness, or sometimes even for anxiety. As to food supplies the tonnage question has become a public matter. It is only dawning on the public mind that four out of five loaves coming to our tables depend upon sea carriage. We are defended by the navy, but fed by the mercantile marine. Any failure of the latter would soon develop a state of things the most powerful navy could not prevent. The most magnificent fleet could not keep a starving population quiet. Is it a safe arrangement, asked the speaker, to be dependent on foreign grown wheat and sea-communications for the daily bread of four-fifths of our population? Ought our rulers be satisfied with such a degree of dependence? Is it possible that the only answer of statesmanship to such a problem is—"Laissez-faire!" Our present position is the direct result of laws wisely enacted in totally different circumstances, laws which answered the nation's purpose at the time, though they failed to accomplish the glowing pictures of prosperity to our agriculture which they heralded. In submitting that all these circumstances call for a reconsideration of our policy, the lecturer closed with the words:—"We have the ships to carry the wheat, and we have the navy to protect its transit, but I submit it ought to be a prime object of English policy to lessen our dependence for daily bread on those who might properly want the corn themselves or be reluctant sellers to us in case of war.

---

The Polson Iron Works Co., of Toronto, which recently completed a powerful dredge for the Canadian Government, has contracted to build another dredge of the dipper pattern, which will, it is stated, be the largest of its class in the world. It will be capable of scooping up 8 cubic yards, or about 13 tons, at a lift, and this from a depth of 50 feet. This it can do at the rate of 60 loads an hour, or 15,000,000 pounds per day of ten hours. The dredge will be 96 feet long, 36 feet 8 inches beam, with a mean depth of 10 feet 6 inches. The arm carrying the dipper will be 66 feet long. The cylinders of the main hoisting engine will be 16 inches in diameter with a stroke of 18 inches. This immense machine is being built for J. Poupore, who will use it in conection with government contracts at Maisonneuve and Sorel. The engineer is L. A. Desy, of Montreal. It will be ready for delivery on June 1 and its cost will be about $62,000.

## SHIPPING AND MARINE JUDICIAL DECISIONS.

(COLLABORATED SPECIALLY FOR THE MARINE RECORD.)

Admiralty—Appeal—Review of Findings of Fact.—It is a well established rule in admiralty that where the objection on appeal to a decision is that it is based on a fact found by the lower court on conflicting testimony of witnesses whose credibility is questioned, such decision will not be reversed unless it clearly appears to be against the evidence. Jacobsen et al., vs. Lewis Klondike Expedition Co., 112 Fed. Rep. (U. S.) 73.

---

Admiralty—Costs—Expense of Procuring Bond.—The claimant of a libeled vessel secured an order, under admiralty rule 53, requiring the libelant to give security to respond in damages as claimed in respondent's cross libel. In compliance with such order, libelant procured a bond to be executed by a surety company. Held, that on dismissal of the cross libel on final hearing, respondent was properly taxed with the amount paid by libelant for such bond, as a part of the costs. Jacobsen et al., vs. Lewis Klondike Expedition Co., 112 Fed. Rep. (U. S.) 73.

---

Maritime Liens—Medical Treatment of Stowaway—Authority of Master.—A stowaway, discovered after a vessel had left port, was required by the master to sign shipping articles for the voyage. He was not a seaman, and while engaged in voluntarily assisting the crew he fell on the deck, and was severely injured. On reaching a port he was placed by the master in a hospital, where he was treated by libelant's physicians. Held, that the act of the master in requiring him to sign the articles under the circumstances did not attach him to the vessel, nor create any obligation different from that which necessarily arose from his being voluntarily and wrongfully on board, and that the master was without authority to pledge the credit of the vessel for his treatment. The Laura Madsen, 112 Fed. Rep. (U. S.) 72.

---

Towage—Breach of Contract by Towing Vessel—Negligent Navigation.—A steamship engaged in transporting passengers and freight from Seattle to Alaskan ports also contracted to tow two steamers designed for navigating the Yukon river to St. Michaels'. She attempted to take the outside course, but was compelled to return because of injury to the tows, and then proceeded on the inside passage for 700 miles, when she again took the outside course, against the protest of the tows, and continued until obliged by distress signals from one of the tows to take her into a port for repairs. The passengers objected to the delay occasioned by the tows, and she then left the disabled tow and proceeded by the open sea with the other, which was lost two days later. The one which was left subsequently made St. Michaels, taking the inside passage, under her own steam. It was shown that the only safe course with such tows, and the only one usually taken, was by way of the inside passage. Held, that the fact that the towing steamer was also engaged in other business did not relieve her from the obligation under her contract to exercise the same degree of care and skill with regard to her tows as would have been required under the circumstances if the towage had been the only purpose of her voyage, and that a finding that she was negligent, and failed to exercise such care and skill, in leaving the inside passage and in abandoning her tow, and was liable to such tow for a breach of contract, was supported by the facts shown. Jacobson et al., vs. Lewis Klondike Expedition Co., 112 Fed. Rep. (U. S.) 73.

## AN OLD SUBMARINE BOAT.

There are a few hundred books in the Congressional Library which never leave the confines of the building. So precious are they that readers are only allowed to use them within the library walls. No Senator or Representative has influence enough to break this ironclad rule. The books are doubly guarded by being placed in a fireproof safe built into the walls of the nearest approach to a fireproof building in the United States.

To the student of early American art, there is in this department a book of inestimable value. It is the "History of the Rise and Progress of the Arts of Design in the United States," by William Dunlap, and published (in two volumes) by Scott & Co., New York, in 1834. The title conveys nothing of the hidden treasure of history, anecdote and quaint expression. The book contains a series of reminiscences, written by Dunlap after he became Vice President of the National Academy of Design. He tells of the early art struggles in America and England of such contemporary artists as Benjamin West, James Claypoole, Charles Wilson and James Peale and Gilbert Stuart; then he approaches the life and experiences of Robert Fulton. He is a man who is talked a great deal about in this day, but his life is too little known, and his discoveries and inventions are credited to others. One reads to-day of the successful test of the submarine boat Fulton, yet few associate that engine of modern warfare with the name of the man who 100 years ago invented and successfully experimented with a boat similar in many respects. The life of this man—whom Dunlap knew personally—in so far as it deals with the submarine boat, is intensely interesting.—Henry Russell Wray, in the Era.

MARINE RECORD

DEVOTED TO NAVIGATION, COMMERCE, ENGINEERING AND SCIENCE.
ESTABLISHED 1878.

PUBLISHED EVERY THURSDAY BY
THE MARINE RECORD PUBLISHING CO.
Incorporated.

C. E. RUSKIN.....Manager
CAPT. JOHN SWAINSON.....Editor

CLEVELAND, Western Reserve Building. CHICAGO. Royal Insurance Building.

SUBSCRIPTION.
One copy, one vear, postage paid.....$2.00
One copy, one year, to foreign countries.....$3.00
Invariably in advance.

ADVERTISING.
Rates given on application.

All communications should be addressed to the Cleveland office,
THE MARINE RECORD PUBLISHING CO.
Western Reserve Building, Cleveland, O.

Entered at Cleveland Postoffice as second-class mail matter.

No attention is paid to anonymous communications, but the wishes of contributors as to the use of their names will be scrupulously regarded.

CLEVELAND, O., FEBRUARY 13, 1902.

## SHIPBUILDING IN THE UNITED STATES.

Lewis Nixon has an article in the February Cosmopolitan on the development of shipping in the United States, which has, he says, in the past two years called into being the one remaining factor that will make the United States of America the great shipbuilding and shipowning country of the world. There is a steady demand for ocean going American bottoms.

The growth of the American shipyard has been slow, owing to the fact that shipbuilding and shipowning in the foreign trade have been discriminated against by United States laws. Formerly we built wooden vessels for all the world, with our advantages of abundant forests. Today the conditions as to cheapness and quality of material for the hulls are reproduced in steel, and Mr. Nixon prophesies that we shall assuredly again build the world's vessels as we did in the days of the wooden hulls.

The fact that English shipyards have such a demand for ships of all types that they can afford to work each plant upon the particular type of vessel it can best build, is the main reason why they build mercantile vessels today cheaper than we do. For the last ten years there has been a steady demand for vessels of war, and today we build them cheaper than they could be reproduced abroad.

That shipowning is profitable, Mr. Nixon is satisfied, but he believes the same vessel can make more under a foreign flag then under the American flag today, and while trade may follow the flag, it appears naturally to sail under the flag which offers the lowest rates.

Great Britain, when she saw that the vessel of iron was a better vessel commercially than the vessel of wood, gave large orders for men-of-war, and so enabled her shipbuilders to put in metal-working plants and gain experience in building metal vessels. It took us until 188- to catch on. Up to that time all money appropriated for the Navy was spent in the Navy Yards and spent most extravagently, this article says.

In 1882 we began our new navy—built it by contract and built it with American workmen of American materials. Today we have shipyards equal to the best abroad, and in refinement and efficiency of product lead the world. The manufacturers of steel, guns armor and powder have all felt the quickening touch.

Germany at first did very much as we did, building her hulls in Navy Yards, but after the war with France, the great demand for new tonnage led to the placing of an order with a private yard, which was so well and quickly done that the Admiralty suddenly realized the military value of the commercial shipyard. And today Germany not only builds her own vessels, but numerous and profitable orders pour in upon her from all over the world for commercial and naval vessels.

No nation produces better sailors than the United States, but they must be trained, and the opportunity for such training should be given under our own flag.

In conclusion Mr. Nixon says: "I consider a nation which must depend upon other nations to do its carrying, upon the ocean, as undeveloped and tributary to the nations that carry for it. In case of a war between Great Britain and Germany, seventy-five per cent. of our export trade would be cut off. Such a bottling-up of this country would produce wide-spread disaster.

"A shipbuilding and shipowning policy will benefit every calling, profession and trade and bring the American shipyard to the front as competitor with the foreign plants. and bring back the American sailor upon the ocean.

"Shipping and shipyards developed to such an extent that we could carry a fair share of our own trade would keep at home two hundred million dollars now paid to foreigners, and take fully a quarter of a million men from the ranks of idle labor, who would earn at least one hundred and fifty millions a year."

## STEAMSHIP INSPECTION RULES.

The government inspectors of steamboats have made several changes which will be of importance to owners and licensed officers on the lakes.

The new change is that all boilers must be equipped with fusible plugs, made of brass and banca filling. The inspectors will not pass a boat which has not had its boilers fitted with these plugs, and Inspector C. H. Westcott, of the Eighth district, says that he will probably issue a circular letter later notifying owners of the new requirement.

One of the strict measures adopted by the supervising inspectors is that many of the old style of plugs will not be accepted. Recent inspections after explosions, have revealed the fact that in many instances the fillings have failed to melt when the water in the boilers got low and that the purpose of the plug was, therefore, lost.

Another important position taken by the supervising inspectors is that they may hereafter anticipate the expiration of licenses of masters, engineers, and pilots thirty days ahead of the actual expiration and renew the papers during the winter when business is dull.

Many of the papers run out in April, May and June, and during this time the office force of the supervising inspector is overcrowded, and the new move was to shift a large part of this work into the dull months as well as to make it easier for the officers whose licenses need renewing.

This new rule will go into effect in about two weeks, or immediately after the proceedings of the supervisors have been compiled by the secretary and printed.

## "SOO" CANAL COMMERCE.

Statistical summary of lake commerce, through canals at Sault Ste. Marie, Michigan and Ontario, for season of 1901:

| | |
|---|---|
| Total mile-tons | 23,383,861,987 |
| Total freight carried, net tons | 28,403,065 |
| Total valuation placed on freight carried | $289,906,865 |
| Average value per ton of freight carried | $10.21 |
| Total amount paid for freight transportation | $23,217,974.07 |
| Average distance freight was carried, miles | 823.3 |
| Cost per mile, per ton, mills | .99 |
| Average cost per ton for freight transportation | $0.82 |
| Total number registered vessels using canals | 893 |
| Total number of passages by unregistered craft carrying freight | 413 |
| Time American canal was operated, days | 230 |
| Time Canadian canal was operated, days | 246 |
| Total valuation placed on registered vessels | $60,556,100 |
| Total number of passengers transported | 59,663 |
| Freight carried by | |
| Registered vessels, tons | 28,353,265 |
| Unregistered vessels, tons | 49,800 |
| American vessels, per cent | 96 |
| Canadian vessels, per cent | 4 |
| Passengers carried by | |
| American vessels, per cent | 28 |
| Canadian vessels, per cent | 72 |

The canal post office delivered 118,270 pieces of mail during the season, consisting of 107,643 letters, 4,926 postals, 5,046 newspapers and 655 parcels. In addition to this, 905 pieces were returned to the city post office after being held 30 days uncalled for, and 2,441 pieces were forwarded to new addresses. This shows an increase over the previous year of 13,683 pieces of mail. The carrying, distributing and delivery of marine mail was done by the office watchmen in addition to their regular duties of receiving masters' reports and keeping traffic records.

NEVER before since the Civil War has the Navy Department been so at a loss to obtain officers for the vessels of the Navy as at the present time. If a glance be taken at the orders to officers issued during the past few weeks, it will be noticed how very few assignments to commissioned officers have been made. The truth is that there are no officers left on shore duty who can possibly be sent to sea, notwithstanding the fact that the Bureau of Navigation is only allowing a few months shore duty to officers of watch and division rank. It is stated at the Department, that matters have now reached such a point that it is impossible to commission a single vessel without placing some other craft out of service. Some relief will have to be afforded by the present Congress, unless it is the desire of that body to see many of the best vessels in the Navy rapidly deteriorate for want of proper care.—Army and Navy Journal.

## ICE IN RIVERS AND HARBORS.

A general increase in the thickness of ice, as compared with the reports of the previous week, is shown throughout the northern districts. The Mississippi is now frozen within a short distance of Cairo, Ill., and from St. Louis to St. Paul the ice ranges from 2 to 25 inches. In the Missouri ice ranges from 11 inches at Kansas City to 25 inches at Williston; at stations in the lake regions, from 5 to 30 inches, and in the rivers of New England from 4 to 22 inches.

The following reports have been received:

Gardiner, Me., February 10.—Snow 3 inches deep. Ice 12 inches thick. Weather very favorable for harvesting; fully one-third of the crop housed during the past week.

Bangor, Me., February 10.—Snow 6 inches deep. Penobscot river frozen; full of anchor ice.

Albany, N. Y., February 11.—Light covering of snow in Hudson Valley. Ice 20 inches thick in Lake George, and 13 inches thick in Hudson river at Cedar hill. Second crop of ice in creeks ten inches thick.

Harrisburg, Pa., February 10.—Susquehanna river closed early on the morning of February 7th.

Cairo, Ill., February 10.—Mississippi river back of city frozen over; thickness of ice near shore 4.5 inches.

Duluth, Minn., February 10.—Lake ice extends 22 miles averaging 5 inches.

As compared with the corresponding date of 1901 there is more ice in all northern districts, excepting New England and at stations on the upper Missouri river, where there is considerably less.

JAMES BERRY, Weather Bureau.

## THE HEAVENS IN FEBRUARY.

Astronomical data for February, 1902, furnished to THE MARINE RECORD by the Washburn observatory:

Mercury and Venus are both evening stars the first part of the month; but the former is low and not easily seen and the latter, though still a brilliant evening star, is rapidly approaching the sun and diminishing in brightness. Venus passes through inferior conjunction Feb. 14th, followed by Mercury Feb. 18th, so that both planets become morning stars late in the month, Mars is too close to the sun for observation. Jupiter and Saturn appear again in the southeastern sky, in the early morning, the latter a little south and west of the brilliant Jupiter. The pair of planets rise about one hour before the sun by the middle of the month.

The times of sunrise and sunset at Milwaukee for the month are as follows:

| | SUNSET. | SUNRISE. |
|---|---|---|
| February 1 | 7:08 | 5:03 |
| February 11 | 6:56 | 5:17 |
| February 21 | 6:42 | 5:30 |
| February 28 | 6:31 | 5:39 |

The times of the moon's phases are:

| | | |
|---|---|---|
| New moon | February 8 | 7:22 a. m. |
| First quarter | February 15 | 8:57 a. m. |
| Full moon | February 22 | 7:03 a. m. |

The principal fixed stars visible during the month in the evening hours are:

To the west Capella, Aldebaran and the Pleiades. Near the meredian, the bright stars of the constellation Orion and Sirius. To the east, Procyon, Regulus, and Castor and Pollux.

## THE ATLANTIC FERRY.

To clip from twenty-four to thirty-six hours from the record time for crossing the Atlantic is the promise of the New York & European Steamship Co., a new trans-Atlantic steamship line, which offers assurance of a speedy fulfillment of its pledge. This company, which has already applied for pier privileges in New York, and formulated the larger part of its plans, expects, by the substitution of the turbine engine for that now in use, to secure a constant speed of 30 knots an hour in its new boats. Such speed will mean that passengers can be carried from this country to Europe in a little more than four days. The success that has attended the use of the turbine engine in Europe, and especially the remarkable speed that has been secured thereby, has naturally raised the question as to its adaptability for trans-Atlantic steamers. In New York a strong company has been organized, and plans have been pretty well completed for this new line. To cut off a day in the time of crossing the Atlantic will mean to bring enormous profits to the steamship company which succeeds in doing it. Fast mails, not only of this country, those which are beginning to pass through Australia and the far east, will naturally fall to the steameship company that can handle them quickest. Delivered at Queenstown, these mails could, according to the plans of the New York & European Company, be carried in three days and seven hours, a reduction of two days from the present time. Of the importance and value of the turbine engine Professor R. H. Thurston recently spoke at length before the Society of Mechanical Engineers.

The private shipyards in the United States have for the past year or so been visited by representatives of foreign maritime nations to view our machinery and study our methods, and have returned home amazed at the progress the shipbuilding industry of this country has made.

## EXTENDING OUR BOUNDARIES.

In the "Nineteenth Century and After" for January, Edwin C. Burgis advocates a new ocean route to Canada, making Sydney, C. B., which is open to navigation the year round, the port of call. From Liverpool to New York is 3,055 knots, to Sydney, 2,282, a saving of 773 knots, or thirty-five hours steaming. The vessel destined for Sydney can steam at full speed nearly up to the wharf, instead of having to slow down as a steamer must in entering New York harbor, and passengers can be transferred from the steamer direct to the cars at the wharf. It is estimated that 24 hours can be saved in the transit to Montreal by this route over the journey by way to New York.

But the chief significance of Mr. Burgis's article is in its frank statement of the disadvantages of the present Canadian route by way of the Straits of Belle Isle and the St. Lawrence. The approach to Rimonski, the present port of call, 500 miles up the St. Lawrence, is probably one of the most dangerous in the world. The icebergs in the Straits are so numerous as to often delay the mail boats from 24 to 26 hours, and the passage up the St. Lawrence is through a fog which prevails there for at least one-third of the time of navigation, which is along the banks of a dangerous river full of troublesome currents.

The best escape for Canada from her various difficulties is through annexation to the United States, and (nappy thought) perhaps England will accept the Philippines as an equivalent for her hyperborean province. After due probation the Canadians ought to make excellent citizens of the Republic, and we won't send them to South Africa to fight rebellious Dutchmen. The most we shall ask of them is to vote the straight ticket every time and to substitute "the Star Spangled Banner" for "God Save the King." Even the British National Hymn will be permitted to them on special occasion, such as meetings of the Society of St. George and the visit of an English prince. The Canadians are really excellent fellows and would be much happier under the aegis of an American flag if they only knew it. No disrespect to Aguinaldo and his followers is intended by the suggestion here made. If it is acted upon, it may make the Filipinos sorry that they left us and fill the Canadians with corresponding joy that they have found entrance into our happy home.

Now that we have Porto Rico, with Cuba under our guardianship, and are to have the Danish Islands, perhaps we can persuade England to throw in her West Indian possessions by way of boot and thus establish a foundation for enduring peace between Great Britian and the United States. The Philippines will probably be worth more to England than they ever will be to us, and Canada and the British West Indies are of little value now to the home country, except as a menace to the United States, and a possible source of future differences between two countries which should be ever at peace, but which can only establish peace upon enduring foundations by considering the material interests of one another. Now that we have an equivalent to offer, let us make a trade for British possessions within the purview of the Monroe Doctrine. No nation is content until it has reached the compass of its natural boundaries, and our natural boundaries are the Atlantic, Pacific and Arctic Seas and the northern coast of the South American continent. The proposition to buy the Panama Isthmus presented in the North American Review for February by F. C. Penfeld is in line with this argument.

## THE STEAMER MONTREAL.

Another floating palace was added to the fleet of the Richelieu & Ontario Navigation Co., when the steamer Montreal was launched at the shipyard of the Betram Engine Works Co., Toronto, on Monday last. The new boat is worthy of her name, and worthy to sail as a companion vessel to the Kingston and the Toronto, which were built by the same company. The Montreal is 340 feet in length and of the same general construction as the Kingston and Toronto.

The engines include a three-cylinder, three-crank inclined triple expansion engine, the diameter of the cylinders being 32 inch, 53 inch, and 88 inch respectively, with a stroke of six feet six inches. The high-pressure cylinder is in the middle and its crosshead works the air pump. The engine is estimated at 3,000 h. p. The paddle-wheels are 25 feet in diameter, and have 11 feathering curved steel buckets each. This form of engine was introduced three years ago by the Bertram Co., in the steamer Toronto, and gave great satisfaction. There are six Scotch type boilers, each 11 feet in diameter and 12 feet long, with two Morison corrugated furnaces, 42 inches diameter, fitted with the Howden down draught system. The working pressure of steam will be 185 pounds. The electric plant will furnish current for 1,200 16 c. p. lamps, and the pumps will supply running water to every stateroom. There will also be steam steering gear, steam winches forward and aft, steam windlass, and steam heat in the cabins.—The Canadian Manufacturer.

The speediest long-distance delivery of mail ever accomplished in the world was that of the consignment which left Sydney, Australia, Oct. 15, for London, England by the American route. A distance of 15,265 miles was covered in 31 days, a saving of four days over the Suez canal route.

## ANOTHER CELEBRATION.

On June 4, 1903 will occur the semi-centennial anniversary of the breaking of ground for the construction of the first canal at Sault Ste. Marie, Mich., and a movement is on foot to make a national celebration of the event. Probably no single act has served so much to advance the commercial prosperity of the States as the construction of this canal, and it is fitting that the event should be commemoorated by the nation. The commerce which passes through this canal is more than three times as great as that which passes through Suez, notwithstanding the fact that the canal is closed to navigation during four months of the year. The enormous total of 28,403,065 tons of freight passed through this canal during the year of 1901, of which 18,090,618 tons was iron ore. This canal opened the highway for these great deposits of iron ore which have done so much to revolutionize the manufacture of iron and steel and which have undeniably brought the center of the world's making steel west of the Allegheny Mountains. Were it not for the great mineral region which is reached through the Sault Ste. Marie canal the United States could not possibly have attained its commanding position in the industrial world. These facts are well known to those who live in the lake region.

## EASTERN FREIGHT REPORT.

Messrs. Funch, Edye & Co., New York, report the condition of the eastern market as follows:

We have again to report a very small number of fixtures for the week, which is indicative of the demoralized condition of freights from this Coast. Whilst the demand in all directions is of a very limited nature, owners are pursuing the policy of waiting as long as possible before fixing, in the hope of some improvement taking place, though we regret to say there are no encouraging signs apparent. Charterers from South Atlantic ports are indifferent about taking up further tonnage, and what little enquiry appears in this direction is chiefly to take care of phosphate contracts made some time ago. For timber business from the Gulf there is some demand, but owner's limits are at present above what shippers are prepared to pay. Tonnage could be placed for case oil to the Far East at possibly a trifle over the last rates paid.

Aside from a limited enquiry for long voyage sailing vessels to load case oil at rates which owners are apparently unwilling to entertain, there is nothing of interest to report in the sail market, which continues dull and featureless as in the past.

## STATEMENT OF THE VISIBLE SUPPLY OF GRAIN.

As compiled by George F. Stone, Secretary Chicago Board of Trade February

| CITIES WHERE STORED. | WHEAT. Bushels. | CORN. Bushels. | OATS. Bushels. | RYE. Bushels. | BARLEY Bushels |
|---|---|---|---|---|---|
| Buffalo | 3,065,000 | 484,000 | 387,000 | 28,000 | 892,000 |
| " afloat | 361,000 | 84,000 | ..... | ..... | ..... |
| Chicago | 6,731,000 | 4,588,000 | 500,000 | 1,050,000 | 189,000 |
| " afloat | 417,000 | ..... | ..... | 77,000 | ... |
| Detroit | 390,000 | 234,000 | 48,000 | 118,000 | 24,000 |
| Duluth | 10,830,000 | 199,000 | 188,000 | 454,000 | 288,000 |
| " afloat | 511,000 | ..... | ..... | ..... | ..... |
| Fort William, Ont. | 4,380,000 | ..... | ..... | ..... | ..... |
| Milwaukee | 586,000 | 138,000 | 396,000 | 40,000 | 79,000 |
| Port Arthur, Ont. | 2,000,000 | .... | ..... | .... | ..... |
| Toledo | 57,000 | 1,069,000 | 56,000 | 226,000 | ..... |
| Toronto | 68,000 | ..... | 13,000 | ..... | 30,000 |
| On Canals | 46,000 | 3,000 | 112,000 | 37,000 | 50,000 |
| Grand Total | 56,566,000 | 11,580,000 | 4,416,000 | 2,355,000 | 1,895,000 |
| Corresponding Date, 1900 | 58,494,000 | 16,050,000 | 10,290,000 | 1,205,000 | 1,779,000 |
| Increase for week | .... | ..... | .... | ... | ..... |
| Decrease " " | 1,363,000 | 52,000 | 115,000 | 48,000 | 225,000 |

While the stock of grain at lake ports only is here given, the total shows the figure for the entire country except the Pacific Slope.

## LETTERS AT DETROIT MARINE POST OFFICE.

FEBRUARY 12, 1902.

To get any of these letters, addresses or their authorized agents will apply at the general delivery window or write to the postmaster at Detroit, calling for "advertised" matter, giving the date of his list and paying one cent.

Advertised matter is previously held one week awaiting delivery. It is held two weeks before it goes to the Dead Letter Office at Washington, D. C.

Bonner H J.
Bolster Capt Wm.
Barrett Thos.
Beach John, C A Eddy
Bird R W, F Brown
Brown Capt J W,
Chapman Enoch, Seattle
Decatur W A.
Groves J D.
Gotham Myron
George C. Pridgeon
Hudson W L, Rust
Harrison E. Amazon
Hill Fred C
Knox W S, Bangor
Karnes Oscar, Sawyer
Jack James, New Orleans
Leonard Lewis
Lawler Thos, Aurora
McPherson John
McDougall T A
Mulhall Pat, Rhodes
Mabb Chauncey L
Martinson Jno, Troy
Owen James
Petro F C, Pontiac
Pifer Annie
Parker Wm, Onoko
Pliske E C, Matoa
Rooch F H, Waldo
Wilson Arthur, Tampa
Walker H C

F. B. DICKERSON, P. M.

## FLOTSAM, JETSAM AND LAGAN.

Lewis Nixon, the shipbuilder, is also an automobile builder, being the principal owner of the U. S. Long Distance Automobile Co., of 307 Whiton street, Jersey City, N. J., where he is turning out dozens of automatic gasoline carriages that will run 150 miles on five gallons of gasoline.

According to Capt. A. B. Wolvin, the head of the Great Lakes and the St. Lawrence River Transportation Co., that concern is negotiating with the American Ship Building Co., preparatory to placing an order for all the ships that can be built during the present year. It is said the negotiations will be closed shortly. The boats will carry grain between Duluth and Quebec. The company has obtained possession of the elevator owned by the Great Northern Railway of Canada, at Quebec, and it already has such facilities at Duluth. The elevator capacity has been arranged for and there will be no difficulty whatever in that respect.

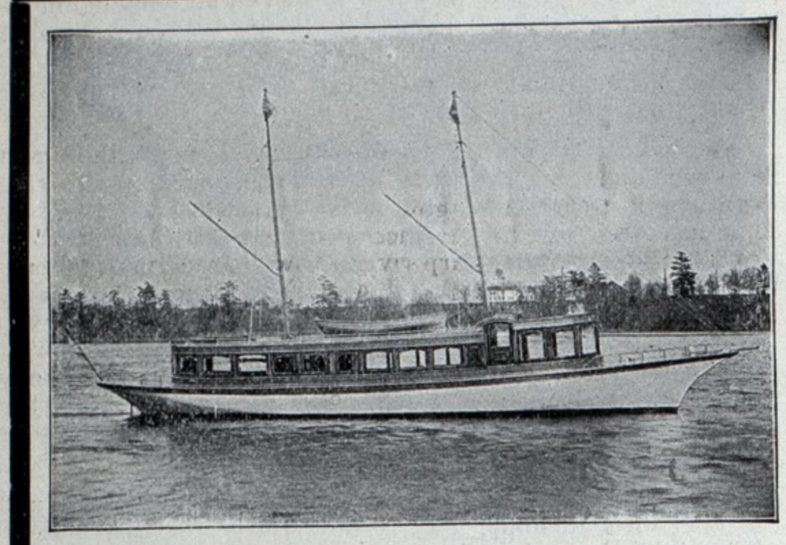
The 1902 Nautical Almanac, published by Riggs and brother, Philadelphia, Pa., is now ready for distribution. The almanac is 6 by 9 inches in size, neatly bound in heavy paper, and comprises 162 pages. It contains a vast amount of information regarding nautical subjects, and is, as its name indicates, a thoroughly nautical almanac. There is a great deal of matter in it which every person must know who has anything to do with yachts or vessels of any kind. such, for instance, as information regarding tides, speed trials, distances, measurements, information regarding the sun, moon and stars, pilot matters, rules to prevent collisions at sea, rules for vessels both at sea and inland waters.

Peter Reid, an old resident of Cardinal, gives some interesting reminiscences of early navigation on the St. Lawrence. He arrived at Montreal in 1841, and came up on the "Ericsson," the first steamer of the propeller type built in Canada, which ran between Montreal and Brockville (at which latter place she was built)' by way of the Ottawa river and Rideau canal, the St. Lawrence canals not then being in existence. The "Ericsson," named after the man who designed her engines, was such a success that another boat, the "Propeller," was added for the same route. Mr. Reid says the "Propellor" was named after her builder, but the name was afterwards applied to the type of vessel of which she was a representative.

Although it is admitted by some who have looked over the steamer Pere Marquette 3, that the damage sustained while on the beach at Ludington constitutes a constructive total loss, the Pere Marquette people feel that they cannot spare her and will allow the underwriters to put the craft in condition for further service. The same course was pursued by the railway people in the case of carferry Pere Marquette 16 after her release from the beach at Ludington. The damage of the ferry also constituted a constructive total loss, but as her services were considered invaluable, the underwriters were permitted to go on with the work of repairs and reconstruction. The wrecking and repair bills on the two steamers, to be footed by the underwriters will be upward of $100,000.

The Ludington Record-Appeal announces that the Pere Marquette Railway Co. now owns the five hundred foot water front on the north end of Pere Marquette Lake, which formerly belonged to the Pere Marquette Lumber Co. The salt trust paid $20,000 for the property, and sold it to the railway company for $22,000, retaining all rights in brine, as a salt well is located on the property. L. J. Petit, of Milwaukee, held an option on the tract, but allowed it to lapse. It is now said that the Pere Marquette Railway Co. will shortly come into possession of the entire property from the old Allen dock to the life-saving station. The railway company will probably use the land to increase its present yard room and docking facilities, a new car ferry slip being among the projected improvements.

February 8 has been assigned as the date for the launching of the first of the two big ocean carriers for the American Line, being built at Cramp's Shipyard. The Kroonland, which will be the first to be launched, is the biggest ship ever built in America. She is nearly 600 feet in length over all, of 60 feet breadth of beam and of 18,000 tons displacement, and her gross register tonnage is 18,000 tons. The Finland will shortly follow her sister into the Delaware. A bill providing for the construction of a specially designed cruiser and torpedo boat destroyer has been introduced in the Senate by Senator Penrose. It provides for an electrical system of multiple screw propellers and electrical rudder stearing gear apparatus, the motive power to be a combination of electric and steam turbine, dynamo and electric motor power. The vessel is required to maintain a speed of 40 knots or more an hour. An appropriation of $500,000 is provided. The Board of Directors of the Maritime Exchange have elected Charles E. Bushnell, who is secretary anl Treasurer of the Atlantic Refining Co., a director of the Exchange, to fill a vacancy. A memorial to Congress was adopted, commending the bill to increase the efficiency of the United States Marine Hospital Service, and to change its name to the United States Health Service, in order to give it a title that will more adequately express its scope and add to its dignity. Another memorial recommends the "prompt establishment of commercial reciprocity on a generous basis between the United States and Cuba," and condemns the proposed amendments of the "Harbor Act."



A TRUSCOTT BOAT

SIMPLE, SAFE, RELIABLE, SPEEDY.

It may be possible to build better and safer boats, but it hasn't been done yet.

We send a completely illustrated catalogue and price list free, which tells you all about boats and

WHY TRUSCOTT BOATS EXCEL.

Truscott Boat Mfg. Co.,
ST. JOSEPH, MICH.

Pintsch Gas Lighted Buoys.

Adopted by the English, German, French, Russian, Italian and United States Light-House Departments for channel and harbor lighting. Over 1,000 gas buoys and gas beacons in service.

Burn Continuously

from 80 to 365 days and nights without attention, and can be seen a distance of six miles. . . . . .

Controlled by

THE SAFETY CAR HEATING AND LIGHTING CO.

160 Broadway, New York City.

## VESSEL TAXATION.

Former State Senator H. R. Spencer, of Duluth, Minn., father of the present Minnesota law governing the taxation of vessels on international waters, affecting Duluth only, has prepared an elaborate defense of the act, for the information of people generally. It sets forth reasons why the proposed change in the system of taxing vessels here should not be changed. Following are his arguments and facts, full of information about Minnesota's only, but famous port:

Section 4141, United States Revised Statutes, is as follows:

"Every vessel except as is hereafter provided shall be registered, or enrolled, by the collector of that collection district which includes the port to which such vessel shall belong at the time of her registry; which port shall be deemed to be that at or nearest to which the owner, if there be but one, or if there be more than one, the ships-husband or acting and managing owner of such vessel usually resides."

In sea parlance a ship's husband is a managing agent. Thus it will be seen that a ship may be enrolled, and hail from any port where her owners appoint and locate a managing agent. A ship can be taxed at no other port than her home port.

John C. Hayes vs. The Pacific Steamship Co., 53, U. S. 596: All that is necessary to avoid the laws of Minnesota is for a ship owner to appoint an agent at some other port, to erase Duluth, and paint the name of some other port on the vessel's stern.

On June 1, 1895, there were enrolled at the United States custom house at Duluth, 56 boats, mostly small tugs, having a total tonnage of 5,000 tons.

On January 1, 1902, there were enrolled at the same port 288 vessels, many being of the largest navigating the lakes, having a gross tonnage of 388,649 tons.

During the year 1894, prior to the passage of the present law, the total amount of taxes collected from vessel property at Duluth amounted to $3,038.

During the year 1901 under the present system the tax amounted to $9,287.90, one-half of which goes to the state and one-half to St. Louis county.

Under the laws of New York, Alabama, Delaware and Pennsylvania no tax whatever is imposed upon vessels registered in those states, engaged in ocean navigation.

The state of Wisconsin has adopted our present law word for word. It is manifest that vessels will not hail from Duluth and be subject to the proposed method of taxation when they can without expense erase the word "Duluth" on their sterns and substitute the name of some other port where the rate of taxation is less. Superior, across the bay from Duluth, is only too anxious to give the vessels the same rate of taxation that now prevails in Minnesota.

Most, if not all, of the vessels hailing from Duluth are owned by stock companies, whose stock is owned by people residing in other states. This stock is assessed and taxed as personal property where the owner of it resides. By taxing ships as such there is thus created a double taxation. So that it canot be said that the vesel owner escapes taxation.

It has been and is the policy of the general government to encourage shipbuilding. Instead of taxing vessels, Congress is now debating the question of giving their owners a subsidy for building and operating ships.

The waterways, the light-houses, the harbors, the registration and enrollment of vessels are all maintained by the general government without a cent of contribution by vessels or their owners; all for the purpose of making cheap transportation possible.

During the navigation season of 1901, the price paid railroads for transportating grain from Fargo to Duluth, 250 miles, was 14½ cents per hundred pounds, or 8 7-10 cents per bushel. At the same time the average rate for wheat per bushel 1,000 miles was 2 3-10 cents.

During the navigation season of 1901 the average freight rate of hard coal from Buffalo to Duluth was 38 cents per ton. The railroad rate on the same from Duluth to Fargo was $3 per ton.

It means that the farmer in Minnesota and Dakota paid the steamship owner only 2 3-10 cents for carrying a bushel of wheat 1,000 miles, while they paid the railroads 8 7-10 cents for carrying the same bushel 250 miles.

It means that the farmer in Minnesota and Dakota paid the vessel man 39 cents per ton for carrying his coal 1,000 miles, while he paid the railroads $3 for carrying it 250 miles.

Can the agricultural and business interests of Minnesota afford to retard the development of lake transportation? On the contary every encouragement possible should be given to promote the building and operating of vessels. The more vessels built, the greater the competition, and the cheaper will be the rates of transportation. The state of New York, recognizing this, has entirely exempted owners and their vessels from taxation when engaged in ocean commerce.

The vessels enrolled at Duluth are engaged in navigation of international waters, and in international commerce. The encouragement given to shipowners by the tax law of 1895 has drawn Duluth a large amount of shipping claiming that city as its home port.

The liberal policy of the general government in deepening the channels and otherwise aiding navigation has placed Duluth at the head of the principal seaports of the world, in the amount of tonnage entering and departing from its harbor. Excepting only the port of New York, the port of Duluth occupies a leading position. During the year of 1901 there entered and cleared from the following ports vessels having tonnage as follows:

| | Tons. |
|---|---|
| Duluth-Superior | 17,245,719 |
| London | 16,529,085 |
| Hamburg | 14,198,817 |
| Chicago | 14,186,100 |
| Antwerp | 13,573,472 |
| Liverpool | 11,818,000 |
| Marseilles | 9,629,114 |

The effect of this large volume of tonnage coming to, and going from Duluth means cheap rates for Western products.

By the terms of the law of 1895 it is restricted to "vessels navigating international waters." This confines the law to lake vessels, and Duluth is the only part of the state where lake vessels touch. All other species of water craft owned within the state are not affected by the law of 1895. The state and St. Louis county have an income of nearly ten thousand dollars per year that they would not have if this law were repealed.

By continued solicitation it is thought that the present amount of tonnage hailing from Duluth can be doubled within the next five years if the present taxation is manifested.

In his report for 1895, the United States Commissioner of Navigation of the Treasury Department, speaks of Minnesota vessel taxation as follows:

"Action by the legislature of Maine, Michigan, Minnesota and Wisconsin, and agitation in the legislatures of California and Massachusetts during the current fiscal year, warrent the hope that seaboard and lake states are awakening to the economic mistake and injustice of heavy taxation of shipping as property."

"It is a mistake for the states, in their relation to the Union, to impose such taxes, for they place American vessels at disadvantages in competition with vessels of our sagacious and untiring foreign rivals. It is a mistake for the states in their relations to one another, for such taxes defeat their own ostensible ends by driving shipping from an exacting home port to the port of another state more far sighted and liberal in its tax policy. These taxes are unfair, for, from the nature of the vessel, it can enjoy only to a slight extent the benefits of those public undertakings to which, in the main, the proceeds of the state and local taxes are devoted. In the last annual report of the bureau a comparative table of taxes paid by American and foreign shipping as property was published, which is hoped not to have been without effect in promoting the legislation of the year, and, as the legislatures of some states were not in session during 1895, it is reprinted in appendix K of this report.

"The most liberal law of the year was enacted by the legislature of Minnesota, providing for an annual tax of 3 cents per net ton on all vessels of the state navigating international waters, in lieu of all other state and local taxes. The rate of taxation brings Minnesota abreast of New York, Alabama, Delaware and Pennsylvania, which exempts American vessels in foreign trade from all state and local taxes, abreast of Massachusetts and Connecticut, which tax only incomes of American vessels engaged in foreign trade, and in advance of Great Britain and Germany, which tax only income of shipping, but at a rate which produces a tax compared with tonnage or valuation higher than that imposed by the new Minnesota law. Under the former law of the state, shipping at Duluth last year, 2,735 gross tons, paid $3,763 in state and local taxes, or fully $1.50 per net ton. Large transfers of vessel property to Duluth are now under way."

To repeat, it seems folly to drive from this state this industry, which, if fostered will for all time bring a constant and increasing revenue to the state.

## LIQUID FUEL FOR STEAMERS.

A large party of gentlemen interested in steamshipping and engineering accepted the invitation of Sir Marcus Samuel, head of the Shell Transport and Trading Co., to witness on board the S. S. Clam, in the run from Gravesend to Port Victoria, a demonstration of the efficiency of liquid fuel. The clam has been for over two years burning oil as fuel, and "has performed the longest mileage on that system." Rock-oil, so used, is not an innovation, but until recently it was an axiom that it did not pay west of Suez. But the owners of the Clam, who hold the concession of the oil lands in Borneo, believe that the rich finds of oil in Texas, in which also they are largely interested, render liquid fuel practicable for steamers in western seas. Its recommendations are efficiency, two tons of oil being equal, it is asserted, to three tons of coal; economy of space, the oil being carried in tanks, which may take the place of water ballast, and in any form occupy less room than coal bunkers; and saving of labor, three stokers taking the place of fifteen hands on board the Clam. Practically there is no stoking; the oil flows by gravity directly into the furnace.

In the combustion of oil the first essential is to throw the liquid into a fine spray, so that every minute drop of oil vapor is ignited. This is effected by a small jet of steam, the steam acting with the oil as a Bunson burner does with gas. The steam and oil mingle at the nozzle of the delivery pipe at the mouth of the furnace, and a large intensely hot flame is produced, a "baffler" of fire brick directing it on the boiler. Rock-oil yeilds four substances —benzine, petroleum, solar oil and a fluid residuum—the latter is the material used for liquid fuel. It has the advantage of being neither volatile, like benzine, nor having an easily inflammable vapor like petroleum or solar oil. Its flash-point is over 200 and this obviates the risk of explosion.

Sir Marcus Samuel observed that the introduction of liquid fuel had been prevented by questions of continuity and regularity of supply, and the price compared with coal. These points were now settled. Oil fuel was largely used in the east, where their company had forty-one ocean supply installations and 350 up-country stations. The North German Lloyd, the East Asiatic Co., of Copenhagen, and the Hamburg and American Line had adopted it. They were now able to guarantee supply with perfect confidence. Capt. McKirdy of the White Star Line, believed there was a great future for the liquid fuel. Sir J. Fortescue-Flannery, speaking as an engineer, expressed full confidence in the new system, as did Capt Coudon, the company's marine superintendent, speaking from his experience on board the Clam and the Murex.—Steamship, London.

## TREASURY DECISIONS.

MEASUREMENT OF VESSELS.

Spaces exempt from measurement under French laws, but not exempt under laws of the United States, may be separately stated in an appendix to American registers for use in French ports.

TREASURY DEPARTMENT, BUREAU OF NAVIGATION,
WASHINGTON, D. C., January, 29, 1902.

Collector of Customs, New York, N. Y.

Sir: Your attention is invited to the decree of March 7, 1899, of the French Government, by which, in ascertaining the tonnage of French steamers under the French law, it is not necessary to include spaces above the deck for the exclusive use of passengers, such as smoke rooms, conversation or social halls or music rooms, ladies' boudoirs, bars, skylights, or staircases.

There are also excluded so-called navigation spaces, such as sky-lights, wheel room, chart room, cabin for helmsman, side-light turrets, storeroom, refrigerator, bakery, lamp room, hospital, and, in general, all spaces not available for the transportation of passengers or merchandise.

An act approved March 2, 1895, provides—

Upon application by the owner or master of an American vessel in foreign trade, collectors of customs; under regulations to be approved by the Secretary of the Treasury, are authorized to attach to the register of such vessel an appendix stating separately, for use in foreign ports, the measurement of such space or spaces as are permitted to be deducted from gross tonnage by the rules of other nations and are not permitted by the laws of the United States.

Upon application by the owner or master of an American vessel engaged in trade with France, you are authorized to attach to the register of such vessel an appendix, for use in French ports, stating separately the measurement of the spaces mentioned above in so far as they are not required to be added to the tonnage under the laws of France, but are required to be included in tonnage under the laws of the United States. Such an appendix should cite this letter as authority, and should be under your seal and signature.

Respectfully, T. CHAMBERLAIN, Commissioner,

Approved: O. L. Spaulding, Acting Secretary of the Treasury.

---

PILOT VESSELS.

Pilot vessels must be enrolled or licensed under the navigation laws, if of the capacity therein specified.

TREASURY DEPARTMENT.
BUREAU OF NAVIGATION.
WASHINGTON, D. C., January 30, 1902.

Sir: This office is in receipt of your report, dated the 23d instant, upon the application of Mr. John P. Virden, president of the Pilot Association for the Bay and River Delaware, that the pilot schooner J. Henry Edmunds, be exempted from enrollment.

The question involved whether such vessels may properly be exempted from the regulations relating to the enrollment and license has been considered heretofore. Decision of January 17, 1877 (T. D. 3076), states:

The subject has already been before the Department, and received its mature consideration in the case of pilot vessels plying in other locatities, and the ruling made, with the grounds on which it rested, is as follows, viz.: All vessels used in the business of pilotage are regarded as engaged in "trading," and should be required to be licensed under the coasting laws. A failure to comply would subject them to the burdens and penalties prescribed in section 4371 of the Revised Statutes. The safety of the revenue demands that vessels whose occupation causes them to have intercourse with others entering ports of the United States should be under the regulation of the revenue laws.

The collector of customs at Boston in that case was instructed to require the vessels concerned to be documented. The regulation has been in force since, and the Bureau perceives no good reason why such vessels should not be included in the statistics of tonnage of the United States, or why they should not be documented so as to be subject to the penalties denounced by the act of January 16, 1895, relating to violations of law on the part of licensed vessels, etc. In the case of the steam pilot boat Philadelphia, mentioned in the Bureau's instructions of July 7, 1897, you were advised that you need not require enrollment until you should have evidence that she was "employed in trade, as comtemplated by law."

No law is found expressly exempting such vessels from the regulations, and the Bureau declines to waive its requirements, in favor of the pilot schooner in question. It may be stated that in other districts it is the practice to document such vessels.

You will please be governed accordingly.

Respectfully, E. T. CHAMBERLAIN, Commissioner,

Collector of Customs, Philadelphia, Pa.

---

## LAKE SUPERIOR NAVIGATION.

The publication in The Mining Gazette of stories of the early sailing on Lake Superior has aroused some interest on the part of well known citizens who have begun to look through old scrap books with the result that some very interesting articles are found. W. D. Calverley has an interesting collection of stories of the early days in the copper country, which he has given the Mining Gazette to use. These stories will be published from time to time and others having data would confer a favor upon the paper if they would send it in. One of the stories published in the Detroit Journal several years ago, reads as follows:

Captain John Parker, of Ontonagon, who is 78 yars old, claims to be the only surviving lake captain who was master of a vessel on Lake Superior as far back as 1874. He was on the Mississippi in 1844, running between St. Louis and New Orleans, went on the Great Lakes in 1846, portaged around the 'Soo' before the government had dug a canal, shot the rapids, was overturned, and three men were drowned, and in his career has explored every nook and corner of the Great Lakes.

Capt. John G. Parker left Milwaukee with Capt. Calvin Ripley in the spring of 1846 on the propeller "Genesee Chief" for Mackinac, then took the steamer Franklin (Captain Benjamin) for the 'Soo,' where Captain Ripley had left the schooner Fur Trader, which he had hauled over the portage in 1845.

"The season of 1846," says Capt. Parker, "we ran between the 'Soo' and upper lake ports. In 1847 Capt. Ripley left me in charge to carry stone for the first lighthouse on Lake Superior—on Whitefish Point. The next light-house was built on Manitou island, off Point Keweenaw. The next was at Copper Harbor. In 1847 there was no light-house on Lake Superior, as the light-house on Whitefish Point was finished in 1848.

"Martin Beaser and myself bought the Fur Trader in the fall of 1849. She was lost in Eagle Harbor in 1852. In the spring of 1853 I bought the schooner George W. Ford, in company with the Minnesota Copper Company, and James Burtenshaw, of Ontonagon. I hauled her over the portage at the 'Soo' and traded between the 'Soo' and upper lake ports. The Ford was lost at Eagle Harbor in 1870.

"In the meantime I sailed the propeller General Taylor in 1859 and 1860, the Mineral Rock and Burlington in 1860 and 1861. In the fall (or winter) of 1860 the Burlington landed at La Pointe on December 8, with E. F. Prince and his winter supplies. I went down to Ontonagon and laid up the Burlington on December 9, and took her below to Detroit in the spring of 1861. I then sailed the George W. Ford until she was lost in 1870.

"In 1850 the 'Soo' canal was opened. The steamer Illinois was the first boat through on the way up, and the North Star next. The George W. Ford was the first vessel locked through on the way down, with a load of copper from the Minnesota mine.

"I located in Ontonagon in 1848, and built the first frame house there. The lumber was cut by Irving Leihy on Bad river and was taken to La Pointe on battons. From there I took it to Ontonagon on the Fur Trader. Ontonagon has been my home since that time. I landed the first barel of freight at Carp river (now Marquette) for the Jackson iron mine in 1848, with the Fur Trader.

"In 1846 the Fur Trader landed an exploring party on Minnesota point (now Duluth and West Superior) in charge of Capt. Peck. It was there I met Mr. Bungo, a full blooded negro. who said he was the first white man settled in Superior.

"The following boats were in commission on Lake Superior in 1846:

"Schooner Whitefish, owned by the Hudson Bay Co., Capt. Lampshire. Traded principally on the north shore for the Hudson Bay Co.

"Schooner Julia Palmer, Capt. Wood.

"Propeller Independence, Capt. Avery.

"Schooner Uncle Tom, Capt. John Standard (run the rapids at the 'Soo' in 1847).

"Schooner Swallaw, Capt. Redmond Ryder.

"Schooner Merchant, Capt. Moore (lost in 1847).

"Schooner Fur Trader, Capt. Calvin Ripley.

"Schooner Chippewa, Capt. Tom Clark.

"Schooner Napoleon, Capt. Stewart.

"Schooner Siscawit, Capt. Barney.

"Sloop Argyle, Capt. Joy (owner).

"Schooner Algonquin, Capt. John Kay, Sr.

"There were other boats on Lake Superior before 1846, but I give this list simply to show what vessels were doing business at that date."

---

The shipyard at Collingwood is working on plans for three large steamers, one of which, being built for the Playfair Co., will have a capacity of 185,000 bushels. The yard will be enlarged in the spring.

---

The "Prensa," of Buenos Ayres, recently published a very interesting account of the expedition sent to Cape Horn by Chile with the object of selecting a site for a lighthouse, which it is proposed to construct upon Land's End, the southernmost point of South America. Contrary to the experience of all previous expeditions, the surveying ship reports most delightful weather in the vicinity of the Cape, with calm, bright days. A fine bay was discovered in the vicinity of the Cape, which is described as being one of the best of natural harbors. This discovery and the proposed placing of a lighthouse in the locality named is of great importance to navigators.

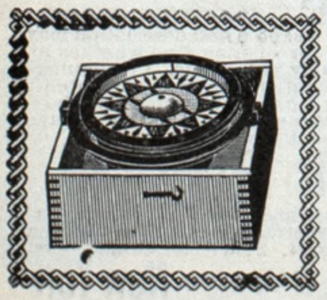
---

## WINTER MOORINGS.

A 32-page booklet showing where about 2,000 vessels are laid up for the winter. It gives steamers, schooners and barges and a list of tugs as well as a list of the vessels which were lost last season and is quite reliable, being taken from correspondence at the various lake ports. Copies sent by mail prepaid on receipt of 25c. The MARINE RECORD Publishing Co., Western Reserve Bldg., Cleveland, Ohio.

MARVELOUS
THE NEW
BAUSCH & LOMB-ZEISS
STEREO Binocular Glasses.
Used by the Armies and Navies of the World.
Invaluable for Tourists, Sportsmen and Every-day Use. Booklet Free.
Bausch & Lomb Optical Co.,
Rochester, N. Y.
New York. Chicago.
For sale by all dealers.

S. F. HODGE & CO.
MARINE ENGINES,
PROPELLER WHEELS,
DECK HOISTERS,
MARINE REPAIRS.
312 ATWATER STREET,
DETROIT, MICH.



THE Bliss LIQUID (Spirit) COMPASS

Made in seven sizes by JOHN BLISS & CO., 128 Front Street, New York, is finely finished sensitive, accurate and durable. Moves quickly and is extremely steady. Is the best Liquid Compass ever made in this or any country. For sale by ship chandlers generally.

# PICKANDS, MATHER & CO.

PIG IRON.
IRON ORE AND COAL.

**FUEL LIGHTERS** AT BUFFALO, ERIE, ASHTABULA, AND CLEVELAND.

At DETOUR, MICH., A FUEL DOCK equipped with Shute capacity of 600 Tons.
Best Quality PITTSBURGH COAL furnished at any time during Day or Night.

WESTERN RESERVE BUILDING, CLEVELAND, O.

---

THE Y&L

## Steamboat Fuel at Chicago.

YOUGHIOGHENY and LEHIGH COAL CO.

J. T. CONNERY, Manager. ARCHIE J. HITCHCOCK, Dock Supt.
MAIN OFFICE: 1238-1242 Chicago Stock Exchange Building.
Long Distance Telephone, Main 5049. 110 LA SALLE STREET.

**FUEL DOCKS:** No. 1, Michigan Slip and Basin. 'Phone 3046, Main.
No. 2, N. Halstead St. Bridge. 'Phone 773, North.

**FUEL LIGHTER:** Equipped with 125 2-ton Buckets for Fueling anywhere in Harbor

WE PRODUCE OUR YOUGHIOGHENY COAL AND GUARANTEE QUALITY.

---

## IN PRACTICAL USE ON THE BEST AND LARGEST LAKE STEAMERS

Using all Types of Boilers and all Pressures of Steam.

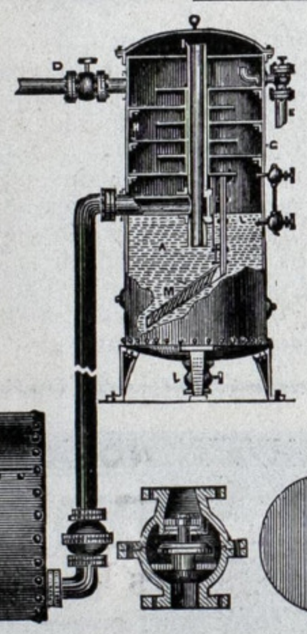
Every Purifier Warranted to Remove all Sediment or Scale-Forming Substance.

## ROBERT LEARMONTH,

PATENTEE,

SEND FOR CIRCULAR. 100 WHITE BLDG., BUFFALO, N. Y.

THE BUFFALO FEED WATER HEATER AND PURIFIER.



NAMES OF STEAMERS ON THE LAKES USING THE BUFFALO FEED WATER HEATER AND PURIFIER:

Zenith Transit Co.'s steamers Empire City, Crescent City, Zenith City, Superior City, Queen City, Pennsylvania and John W. Gates.

The Republic Iron Co 's steamers America, Brazil, Thomas Maytham and Chili.

Mitchell Transportation Co.'s steamer Hendrick S. Holden.

Minnesota Iron Co.'s steamer Presque Isle.

American Steel Barge Co.'s steamer Alex. McDougall.

Lake Michigan & Lake Superior Transportation Co.'s steamer Manitou.

Bessemer Steamship Co.'s steamers S. F. B. Morse and Douglas Houghton.

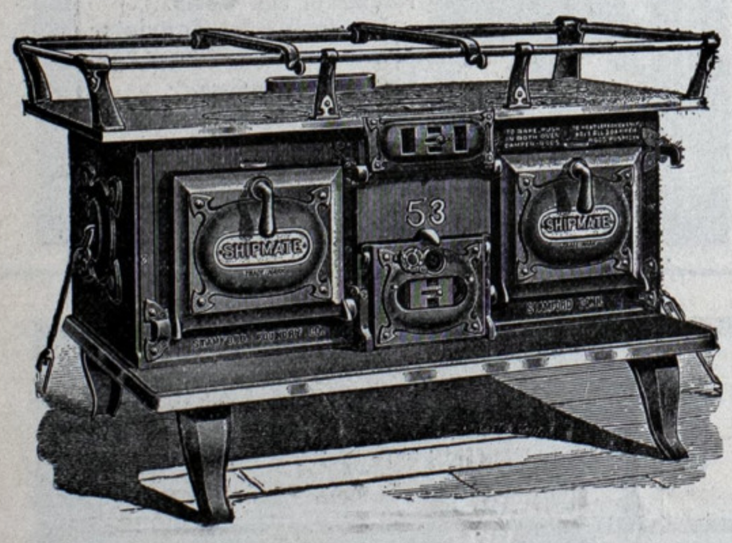
American Transportation Co.'s steamers John Harper and Alex. Nimick.

Red Star Line's steamers Robert Mills and Wyoming.

Wilson Transit Line's steamers W. D. Rees and Andrew Carnegie.

And the steamer William R. Linn.

---



## SHIPMATE RANGES.

There are some cases where it is necessary to have an extra large fire-box in the galley range. We can furnish, without extra charge, the No. 53 Shipmate with a special fire-box having 60 sq. inches more of fire surface than it has as regularly furnished.

The Tinnerman Steel Range Co., 797-803 Lorain Street, Cleveland, have a full assortment of these ranges, and can fill orders for any size.

THE STAMFORD FOUNDRY COMPANY,
STAMFORD, CONN.

Established 1830.

---

# M. A. HANNA & CO.

COAL, IRON ORE AND PIG IRON.

**Steamboat Fuel at Ashtabula.**

Large Supplies of Best Quality.

Fuel scow with elevators and discharging spouts. Storage of 650 tons. Discharges 150 tons an hour into steamers while unloading cargo.

**LIGHTER** carrying different grades at all times.

MINERS AND SHIPPERS.

MAIN OFFICE, Perry-Payne Bldg., Cleveland, O.

---

# THE W. L. SCOTT COMPANY

ERIE, PA.

WHOLESALE DEALERS IN

Shamokin-Wilkesbarre ANTHRACITE
Youghiogheny, Mansfield, PITTSBURG

# COALS

VESSEL FUELING A SPECIALTY

by steam lighter or car dump at all hours. Electric Light.

MAIN OFFICE:
Scott Block. Long Distance 'Phone 440.

FUELING OFFICE:
Canal D ck, Long Distance 'Phone 320.

---

## D. VIANCOURT & SON

Tin, Sheet Iron and Copper Works.

Repairing Stoves, Furnaces, Etc.
Boat Work a Specialty.

211 PEARL ST. 'PHONE A 1095. CLEVELAND, O.

---

## Compasses Adjusted

For deviation, and deviation tables supplied. Great facilities for doing the work by day or night.

## John Maurice.

CHICAGO.

Office, N. W. Cor. Randolph and Market Sts.
Residence, 1213 S. Albany Ave.
'Phone, Canal 767.

---

## Clarence E. Long,

MILWAUKEE, WIS.

Scientific Compass Adjuster.

Compass Compensation, Tables of Deviation and Residual Errors for Wooden, Iron and Steel Vessels by Azimuths of the Sun, Stars, Moon and other Planets.

SERVICE—DAY OR NIGHT.

All adjustments promptly and accurately executed. Estimates and Prices given upon application. All work guaranteed to be absolutely first-class.

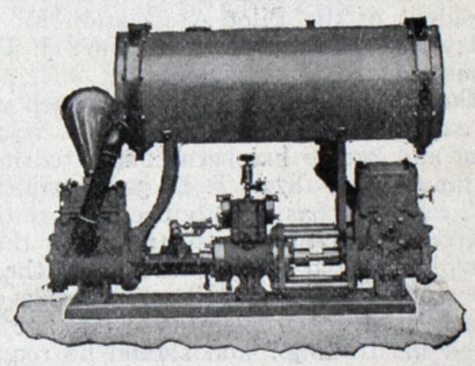
---

## Reduced Rates for Homeseekers

Feb. 4th and 18th via the Nickel Plate Road to Minnesota, Iowa, Colorado, So. Dakota, Arizona, all parts of Texas including its oil fields, and all Western, Northwestern and Southwestern points. Liberal return limit. Inquire nearest Ticket Agent of the Nickel Plate Road, or E. A. Akers, C. P. & T. A., Cleveland O. 17-7

---

JOHN E. THROPP & SONS CO.,
TRENTON, N. J., U. S. A.



SURFACE CONDENSER.

BUILDERS OF
SINGLE, COMPOUND AND TRIPLE EXPANSION
ENGINES.
CONDENSERS.
BOYER SECTIONAL WATER TUBE
BOILERS.
PROPELLER WHEELS.
MACHINERY COMPLETE FOR PLEASURE YACHTS, TUG BOATS AND LIGHT DRAUGHT PASSENGER BOATS.

---

50 YEARS' EXPERIENCE

# PATENTS

TRADE MARKS
DESIGNS
COPYRIGHTS &C.

Anyone sending a sketch and description may quickly ascertain our opinion free whether an invention is probably patentable. Communications strictly confidential. Handbook on Patents sent free. Oldest agency for securing patents.

Patents taken through Munn & Co. receive *special notice*, without charge, in the

## Scientific American.

A handsomely illustrated weekly. Largest circulation of any scientific journal. Terms, $3 a year; four months, $1. Sold by all newsdealers.

MUNN & Co. 361 Broadway, New York
Branch Office, 625 F St., Washington, D. C.

## CHICAGO.

*Special Correspondence to The Marine Record:*

The following meteorological observations are furnished by the office of the United States Weather Bureau, Chicago, for the week ending February 5, 1902: Prevailing wind directions for the week, west; highest velocity, 48 miles from the west on the 4th of February. Mean temperature for the week, 12 degrees; highest temperature 27 degrees, on the 31st of January; lowest, 7, on the 5th of Feb.

The Manitou Steamship Co. has decided to make Frankfort, Mich., a port of call for the steamer Manitou the coming season. This move of the Manitou people is the result of the efforts of the Ann Arbor Railroad Co., to make Frankfort a summer resort. A large hotel at that place has just been completed by the railroad company, and will be open for summer business in June. The time table of the Manitou will not be materially changed by the additional stops between Chicago and Mackinac Island.

The Lake Seamen's union, before adjourning its convention here, decided to ask for a referendum vote of all the branches around the lakes on the question of establishing a uniform wage scale. The vote will be taken during the next two weeks, and the result will be announced Feb. 25. The union decided to oppose a bill just introduced in Congress making the desertion of a sailor after signing articles punishable by imprisonment. An active campaign will be made to prevent the enactment of such a law by Congress.

A meeting of Chicago Nautical School Alumni Association, was held February 6, 1902, at Leland Hotel, Chicago. President Walter D. Hamilton conducted proceedings in his usual graceful way, and made everybody glad he was there. The election of officers for the ensuing year were: President, Capt. Walter D. Hamilton; vice president, E. R. Mason; treasurer, Capt James Travis; secretary, T. L. Page. Board of directors, Capt. Geo. Hammer, Capt. Ed. Kohnart, Capt. Albert Swansen, H. E. Mason and W. J. Wilson. It was decided to hold another meeting before the opening of navigation at which steps would be taken to form a permanent society, which would take up various matters pertaining to lake navigation, and act as a unit in forwarding matters now endorsed by the Ship Masters and Masters and Pilots' Association.

Marine men are seeing any quantity of trouble ahead for themselves at State street bridge the coming season of navigation. First there will be the construction of the new bascule bridge at that point, after the taking out of the old center pier structure. At the same time a big building is to be erected where the Holland dock is now at the south end of the bridge. This means a lot of work on the river front. Then there will probably be a foot bridge put in, and last of all the North Land and North West will probably use the dock on the north side of the river between State and Dearborn streets, lying with their bows near the place where the construction is going on. As the river makes a sharp turn just where the bridge is located, vesselmen foresee any quantity of accidents in the current with all these obstacles to avoid. They are greatly opposed to the plan of a foot bridge. The insurance companies have settled with the Barry Bros. for the fire loss on the steamer Robert F. Burke, which burned at Muskegon last fall. They pay $9,750 and give back what is left of the Burke to the old owners.

---

Messrs. Corrigan, McKinney & Co. chartered vessels to carry 1,300,000 tons of ore from ports at the head of Lake Superior to Lake Erie at 80 cents a ton, the rate which has been demanded by the vessel men. This, with the business that was done the latter part of last week and Monday, makes the total that has been covered up to date about 1,800,000 tons. Among the owners that have made season contracts at the rate named are J. C. Gilchrist, Capt. John Mitchell, Hutchinson & Co., W. A. Hawgood & Co., W. C. Richardson, W. H. Becker, Capt. J. H. Partow, Capt. John Corrigan and Captain James Corrigan. The list includes most of the principal owners of tonnage and the vessel men claim that the rate has been fairly established at 80 cents. They have at any rate much the best of the argument. The shippers that have been holding out for a 75 cent rate admit that they have been unable to do any chartering and the vessel men say that to be fair with the dealers they have done business with, they cannot consistently make contracts with other shippers at a lower rate than 80 cents. The owners are confident that the United States Steel Corporation and other shippers that are in favor of making a cut will make shift before many days, and that the season chartering will be done much sooner than was expected a few days ago. In addition to the ore that was covered Tuesday to be moved from ports at the head of Lake Superior, freight contracts for two blocks of Escanaba ore of 50,000 tons each were practically made. The rate was not settled but it will no doubt be 60 cents. There is some Marquette ore on the market and the rate from that port will probably be fixed. Vesselmen will of course not talk less than 30 cents.

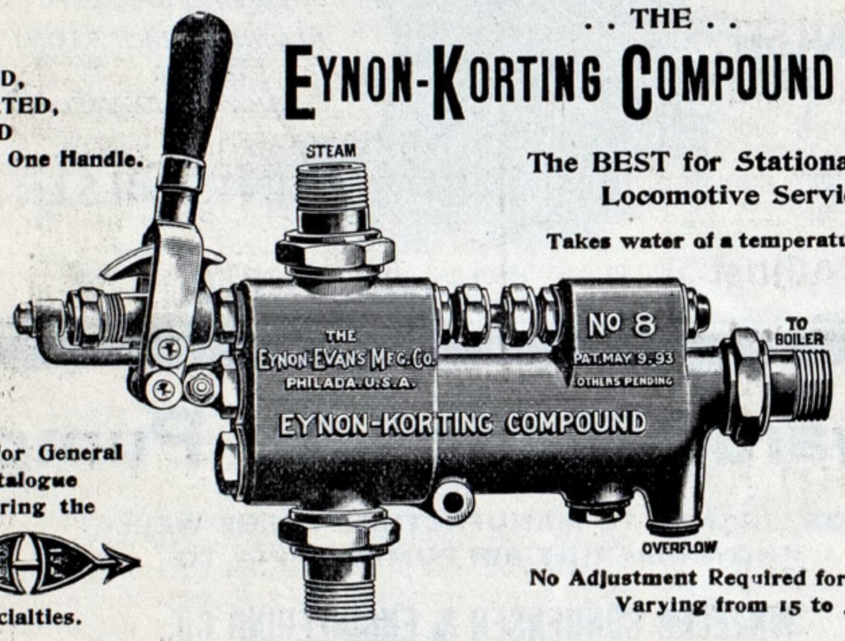
---

A few days ago the announcement was sent out from Toledo of the sale of the barge Crete. Since that time it has been learned that the new owners are W. C. Richardson and Capt. Thomas Jones, of Cleveland, and Capt. L. S. Sullivan, of Toledo. The barge came out in 1897 and measures 2,040 gross tons, and carries 3,500 tons. She went for $6,500, and will be towed during the year by the Roumania.

## Government Proposals.

U. S. ENGINEER OFFICE, Buffalo, N. Y., February 1, 1902. Sealed proposals for removal of wreck in harbor at Buffalo, N. Y., will be received here until 11 a. m., March 4, 1902, and then opened. Information furnished on application. T. W. Symons, Major Engineers. 6-9


THE CHASE MACHINE COMPANY,
ENGINEERS AND MACHINISTS.
MANUFACTURERS, UNDER THE CHASE PATENTS, OF
Fog Whistle Machines, Hoisting Engines, Steering Engines Automatic Towing Engines,
Power and Drop Hammers, and other Machinery. Engineers' Supplies and General Jobbing.
111 ELM STREET. TELEPHONE, MAIN 994. CLEVELAND, O.

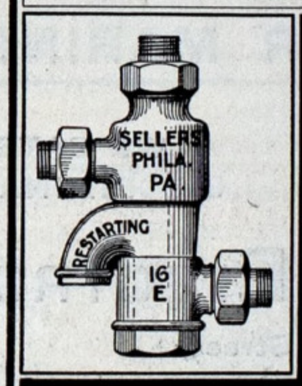
. . THE . .
EYNON-KORTING COMPOUND INJECTOR.
STARTED, REGULATED, STOPPED With One Handle.
The BEST for Stationary, Marine or Locomotive Service.
Takes water of a temperature of 150 degrees.


Will Lift Water 24 Feet.
Has a Greater Range than any other Injector.
Send for General Catalogue covering the

Specialties.
No Adjustment Required for Steam Pressures Varying from 15 to 300 Lbs.
THE EYNON-EVANS MFG. CO.
15th and Clearfield Streets,
PHILADELPHIA, U. S. A.
New York Office, 107 Liberty Street.
Boston Office, 42 Oliver Street.

JOHN DONNELLY, SR., PRES. JOHN DONNELLY, JR., VICE PRES. H. B. FOLGER, TREAS. THOS. DONNELLY, SEC'Y.
THE DONNELLY SALVAGE AND WRECKING CO., Ltd.
KINGSTON, ONT.
EXPERIENCED DIVERS, TUGS, STEAM PUMPS, ETC.,
SUPPLIED ON SHORTEST NOTICE.

ORAM FIX. ESTABLISHED 1860. J. W. FIX.
S. FIX'S SONS,
Successors to S. FIX & SON,
Steam Flue Welding Works
Our Work Stands Government Test.
Our Welds are Perfectly Smooth.
Write us for Prices.
COR. LEONARD AND WINTER STS. Cleveland, O.

Sellers' Restarting Injector


A strictly first class machine at moderate cost.
Perfectly automatic, has wide range of capacities, and raises water promptly with hot or cold pipes.
Very simple, has few parts and is easily repaired.
All parts interchangeable, made of the best bronze, and the workmanship is perfect. Send for special catalogue descriptive of this Injector.
JENKINS BROTHERS, Selling Agents
NEW YORK, BOSTON, PHILA., CHICAGO

IF U Want a PUMP or SYPHON

Write to the E. W. Vanduzen Co. of Cincinnati, O., for their catalogue 76. They give you facts and figures about their Steam Jet Pumps. A postal will bring full information by return mail free of charge.
THE E. W. VANDUZEN CO.,
Cincinnati, O.

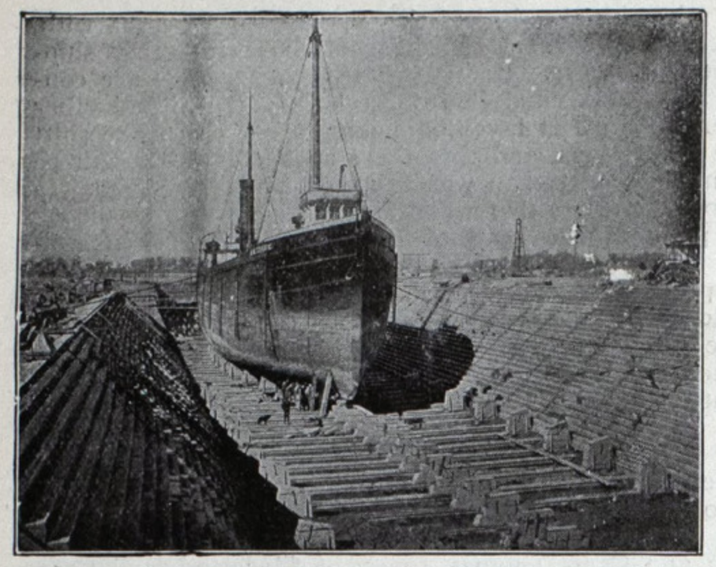
NEVERSINK CORK JACKET AND LIFE BELT.
Warranted 24 lb. Buoyancy and full Weight of Cork, as required by U. S. Inspectors. Consolidated Cork Life Preservers. Superior to all others. Rings Buoys and Fenders. SAFEST CHEAPEST.
Approved and adopted by U. S. Board of Supervising Inspectors.
Also adopted by the principal Ocean, Lake and River Steamer Lines as the only Reliable Life Preserver. Vessels and trade supplied. Send for Catalogue.
Awardad four medals by World's Columbian Exposition.

METALLIC and WOODEN LIFE BOATS.

Metallic Life Rafts, Marine Drags.
Manufacturer of Woolsey's Patent Life Buoy, which is the lightest, cheapest and most compact Life Raft known. Send for illustrated catalogue. Get our prices before buying elsewhere.
D. KAHNWEILER'S SONS, 437 Pearl St. New York City.

A. J. MORSE & SON.
DIVING APPARATUS

140 CONGRESS ST. BOSTON.



# Craig Ship Building Co.

TOLEDO, OHIO

New Dry-Dock 450 feet long, 110 feet wide on top, 55 feet wide on bottom, 16 feet water on sill.

**Repairs to Metal and Wooden Ships a Specialty.**

Metal and Wooden Ship Builders.

---

THOS. MACBETH, President.
C. W. KELLY, M. E., Vice President.
JOHN G MESKER, Supt. of Machine Shop.
L. S. DICKEY, Manager.
C. J. SNOW, Sec'y and Treas.

# THE MACBETH IRON CO.

**Machinists - Pattern Makers.**

IRON, BRASS AND STEEL CASTINGS, AETNA GRATE BARS

PLATE AND SHEET IRON WORK.
REPAIR WORK A SPECIALTY.

57 West Center Street, CLEVELAND, OHIO.

---

## BURTON & KENNEDY,

ENGINEERS AND MACHINISTS,

**Manufacturers of the BURTON STEAM PUMP and Reducing Valve**

Blacksmithing, Steamfitting and Repair Work given Prompt Attention.

PUMPS AND MARINE WORK A SPECIALTY.

Cor. Main and Center Streets, Phone Cuy C. 500. CLEVELAND, O.

---

TELEPHONE WEST 244. RESIDENCE, 183 LAWN ST.

## LAKE ERIE BOILER WORKS,

J. J. KEENEN & SONS, PROPRIETORS

BOILERS, TANKS and SHEET IRON WORK, COAL and ORE BUCKETS

REPAIRING A SPECIALTY

Also Flues Taken Out, Pieced and Reset, New Flues always in stock.

COR. ELM AND HEMLOCK STS CLEVELAND, O.

---

# COMPLETE ELECTRIC PLANTS

## FOR MARINE PURPOSES.

WE CATER TO THE DISCRIMINATING BUYER.

## THE ELECTRO-DYNAMIC CO.

212-226 Ionic Street, PHILADELPHIA, PA., U. S. A.

CABLE ADDRESS: EDCO, A B C CODE.

---

Telephone West 702 G.

## WM. SWEENY,

PRACTICAL

**Ship Carpenter and Caulker,**

Office and Yard, Whiskey Island, Near Willow Street Bridge,

CLEVELAND, - - - OHIO.

---

## JOHN C. JOLL

SHIP CARPENTER, CALKER and SPAR MAKER.

Jobbing of all kinds promptly attended to.

'PHONES { MAIN 523 L. / WEST 808 F. 63 Main St.

Res., 1097 Franklin Ave. CLEVELAND, O.

---

T. LONG, GEN'L. MGR. D. J. MURPHY, SUPT.

## LONG & MURPHY BOILER CO.

MANUFACTURERS OF

MARINE BOILERS, COAL, ORE AND CLAMSHELL BUCKETS,

REPAIR WORK A SPECIALTY.

'PHONES: MAIN 786. A. 2265. 120-126 ELM ST. NIGHT 'PHONE RIDGE 277 X. CLEVELAND, OHIO.

---

## Day's Varnish & Dryer Company

MANUFACTURERS OF

VARNISH, PAINT DRYERS, BLACKS, THINNERS, PAINTS, OILS, Etc.

DRYERS A SPECIALTY.
BLACKEST BLACK BAKING JAPAN.
BICYCLE ENAMEL.

Telephones.
CUY, A-25.
BELL, M-967.

464-468 CANAL ST, Cleveland, O.

---

## Edwards Marine Air Pump.

FOR LICENSE TO MANUFACTURE THESE WELL-KNOWN MARINE AIR PUMPS APPLY TO

WHEELER CONDENSER & ENGINEERING CO.

120 LIBERTY ST,, NEW YORK.

SEND FOR PAMPHLET.

---

W. S. JENKS, President. O. L. JENKS, Vice Pres. and Treas. A. M. CARPENTER, Sec. and Gen'l Mgr.

# The Jenks Ship Building Co.

Office and Machine Shops
Fourth Street.

Yards
Foot of Lincoln Ave.

**Steel and Wood Ship Builders.**
**Marine Engines and Boilers.**

Port Huron, Mich.

**STEAM WINDLASSES CAPSTANS AND STEERING APPARATUS**